PROCEEDINGS

of the

American Society

of

Civil Engineers

SEPTEMBER, 1925

CONTENTS

FALL MEETING, MONTREAL, QUE., CANADA
OCTOBER 14-16, 1925

CURRENT PAPERS AND DISCUSSIONS

		Discussion closes
"Secondary Stresses in Bridges." CECIL VIVIAN VON ABO	Sept., 1924	
Discussion (Author's closure)	Dec., 1924, Jan., Feb., Mar., Apr., Aug., Sept., 1925	Closed
Standard Specifications for Concrete and Reinforced Concrete: Report of Joint Committee on Standard Specifications for Concrete and Reinforced Concrete	Oct., 1924, Jan., "	
Discussion	Sept., "	Uncertain
"Flood Flow Characteristics." C. S. JARVIS	Dec., 1924	
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Papers Presented Before the Sanitary Engineering Division, January 20 and 22, 1925	May, "	
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Progress Report of Special Committee to Codify Present Practice on the Bearing Value of Soils for Foundations, etc	May, "	
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"Municipal Water Supply Problems of Atlanta, Georgia." PAUL H. NORCROSS	Aug., "	Nov., 1925
High Specific Speed Hydraulic Turbines: A Symposium	Aug., "	Uncertain
"The Engineer as a Railroad Executive." JULIUS KRUTTSCHNITT	Aug., "	Nov., 1925
"The Reinforced Concrete Arch in Sewer Construction." CHARLES E. SHARP, JR. (To be Presented Oct. 7, 1925)	Aug., "	Jan., 1926

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INSTITUTED 1852

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SOCIETY AFFAIRS

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AMERICAN SOCIETY OF CIVIL ENGINEERS

PROCEEDINGS

VOL. LI SEPTEMBER, 1925 NO. 7

SOCIETY AFFAIRS

Fall Meeting—Montreal

The forthcoming Fall Meeting of the Society in Montreal, Que., Canada, October 14-16, 1925, is now inviting the attention and expectations of members. Power Development in Canada will be the major topic.

The Society has not visited Montreal for a meeting since the Thirteenth Annual Convention held in June, 1881, and it is fitting therefore that the place, Montreal, as well as the subject, Power Development, should be chosen for these sessions.

The meeting will open on Wednesday, October 14, with the entire day devoted to papers describing the Power Developments of Canada. At the mid-day luncheon, the members will listen to an Address by the Hon. J. L. Perron, Minister of Roads, on "The Roads in the Province of Quebec".

On Wednesday evening, the members of the Society will be the guests of the Montreal Branch of the Engineering Institute of Canada.

The morning of Thursday, October 15, will be devoted to the meetings of several Technical Divisions. The Sanitary Engineering Division expects to consider "Grit Chamber Design"; the City Planning Division has chosen the topic of "Application of Aerial Surveys to City Planning"; the Structural Division's general subject will be "Field Control in the Production of Concrete"; and other Divisions have tentative plans under way.

Thursday's Luncheon will be served on board two steamships, followed by addresses by prominent Canadian officials, after which an inspection tour will be made about the Harbor of Montreal.

A Dinner Dance will be held in the Grand Ball Room of the Mount Royal Hotel, the meeting headquarters, on Thursday evening. Included in the entertainment will be a popular talk by a prominent Canadian on some matter of engineering interest in the Dominion.

On Friday, October 16, there will be an All-Day Excursion by special train to three power developments on the St. Maurice River, with luncheon at the plant of the Shawinigan Company. The party will return to Montreal in time to take early evening trains.

The historic setting of the meeting and the well proved Canadian hospitality, combined with the specially inviting autumn scenic attractions, will prove irresistible to many members, especially to those north of the Ohio River or within touring distance of Montreal.

Meetings of the Board of Direction

This is an abstract of the notes of the Secretary and subject to approval by the Board of Direction at its next meeting.

Meetings of the Board of Direction were held on July 6 and 7, 1925, at the Hotel Utah, Salt Lake City, Utah, previous to the Summer Meeting, the following being in attendance: President Robert Ridgway; Secretary George T. Seabury; and, also, Messrs. Bowen, Bush, Chevalier, Condron, Davis, Dewell, Farnham, Fenkell, Grunsky, Humphrey, Ketchum, Loweth, Mason, A. O. Ridgway, Spofford, and Whitman.

Moment of Silence:

In respect to the memory of the late Paul H. Norcross, Director of the Society, members of the Board stood in silence for a moment.

Plan for Paid-Up Membership:

A plan was adopted to enable members to secure paid-up membership in the Society through the purchase of an annuity. (For more complete information, see page 304.)

Disposal of Unnecessary Library Books:

The following resolution was adopted:

"*Resolved:* That authority is hereby vested in the Library Board of the United Engineering Society to dispose of unnecessary books in the Library of the American Society of Civil Engineers, by sale or otherwise as it may deem best."

Competitive Bidding for Engineering Services Condemned:

The Committee on Professional Conduct presented a report. After extensive discussion, the following resolution was adopted:

"*Whereas,* The Board of Direction of the American Society of Civil Engineers has had brought to its attention the fact that on occasions, Public Authorities ask Engineers through advertisements to submit in competition their terms for preparing plans for Engineering projects, frequently requesting that such tenders be accompanied by an estimate of the cost of the proposed project; and

"*Whereas,* Such procedure is not in the public interest, it being contrary to recognized practice in engaging professional services, thereby asking of engineers a form of competition inconsistent with professional ethics, and consequently tending to eliminate the services of qualified engineers of high professional character; therefore be it

"*Resolved,* That the Board of Direction of the American Society of Civil Engineers emphatically records its disapproval of such procedure, and recommends that Public Authorities and others desiring to secure professional engineering services select an engineer, from those available, on the basis of his

qualifications, experience and professional reputation for work of the size and character under consideration, determining by inquiry of recognized professional authority, the appropriate basis of compensation for such services."

Engineering Advertising Circular an Unethical Practice:

The Committee on Professional Conduct submitted a report with reference to a printed circular which had been brought to the attention of the Board as issued over the name of a member of the Society and as containing certain statements that are undesirable and derogatory to the Engineering Profession. The Board, after a full discussion, adopted a vote of strong disapproval of such practice and ordered that the members concerned be notified and that this expression of disapproval be given publicity.

New Student Chapters:

On the recommendation of the Committee on Student Chapters, the Board authorized the formation of Chapters at Antioch College, Vanderbilt University, and Villanova College.

Eligibility for Student Chapters:

The Board considered and adopted additional regulations as minimum requirements for the admission of Student Chapters. Including the rules previously in force, the complete regulations now comprise the following qualifications required before a Student Chapter application will be granted:

(*a*)—An organization of students in an engineering school of high standing.
(*b*)—The endorsement of the application by the head of the Civil Engineering Department.
(*c*)—A minimum membership of twelve members.
(*d*)—The engineering school must be one that grants the degree of Bachelor of Science in Engineering or its equivalent or the degree of Civil Engineer.
(*e*)—The entrance requirements of the engineering school shall be equivalent to those required by the College Entrance Board.
(*f*)—The curriculum of the Junior and Senior years must require at least one-half of the time devoted to purely engineering subjects.
(*g*)—The engineering school must have had at least one hundred graduates in Civil Engineering before making application for a Student Chapter.

Resolution on Death of Director Norcross:

By a rising vote the following resolutions were adopted:

"*Whereas,* On the eighth day of May 1925, the American engineering profession was sorely bereaved by the death of twelve of its members through the disastrous foundering of the Mississippi River steamboat *M. E. Norman,* near Memphis, Tennessee; and

"*Whereas,* Among those lost was

PAUL HOWES NORCROSS
Member and Director
American Society of Civil Engineers

"*And Whereas,* During more than a score of years of service to the profession and to the Society, Director Norcross had achieved high professional distinction and had endeared himself to all those privileged to be associated with him; now therefore,

"Be It Resolved, That the Board of Direction of the American Society of Civil Engineers here records its profound grief at his untimely passing, extends its heartfelt sympathy to his family and friends, and pays its grateful and affectionate tribute to his qualities as a man, his attainments as an engineer and his zeal and fidelity as an officer of the Society.

"And Be It Further Resolved, That these resolutions be spread in full upon the records of the Society and that a copy thereof be engrossed and presented to his daughter as enduring testimony of the place that her beloved father ever shall hold in the hearts of those with whom he labored for the advancement of his profession."

Letters of Thanks from Memphis Engineers:

Following the effort of the Society to do all that seemed possible in connection with the loss of members and in aid of the families bereaved in the *Norman* disaster near Memphis, the following letters, dated June 15, 1925, have been received by the Society. A. S. Fry, Secretary of the Engineers' Club of Memphis, writes as follows:

"We wish to express the appreciation of the Engineers' Club of Memphis for the beautiful flowers which you sent to the Memorial Service held in Memphis June 7 and for the resolution that Mr. Hunter McDonald presented from the Society. It is a source of real comfort to those of us who are here living with the aftermath of this disaster to know that our brother engineers, particularly the American Society of Civil Engineers, are sympathizing with us.

"The Memorial Service which was held was a very beautiful final tribute to those who were lost in the tragic catastrophe of May 8."

Similarly, a communication was received from J. H. Haylow, M. Am. Soc. C. E., as follows:

"Personally and on behalf of the Engineers' Club of Memphis, wish to extend to you as President and through you to the members of the Society throughout the United States our sincere and heartfelt appreciation for your kind words of sympathy and flowers on the occasion of our memorial service.

"Mr. Bowser was a very dear friend of mine, whose loss I deeply feel. A nobler man and Engineer never walked the path of life."

Messages of sympathy were also reported from the American Society of Mechanical Engineers and by cable from the New Zealand Society of Civil Engineers.

G. M. Braune Elected Director in Place of the Late Paul H. Norcross:

To fill the vacancy on the Board of Direction caused by the death of Paul H. Norcross, G. M. Braune, M. Am. Soc. C. E., Dean of Engineering, University of North Carolina, was elected Director to represent District No. 10. Dean Braune's term will expire in January, 1928.

Committee on Future Aims and Activities of the Society:

The President announced the appointment of a committee of the Board authorized to make a study of the Society, its aims and activities, the personnel of the Committee being Messrs. Willard T. Chevalier, T. L. Condron, H. D. Dewell, Charles A. Paul, and C. M. Spofford. The Committee elected Mr. Paul as Chairman. After a thorough discussion of the scope of this work, an appropriation of $1 000 was made for expenses to January 1, 1926.

Committees to Prepare Memoirs:

The President announced the appointment of the following Committees:

To prepare a memoir of Paul H. Norcross, M. Am. Soc. C. E., George W. Fuller, *Chairman,* Gabriel R. Solomon, and Frederick H. McDonald.

To prepare a memoir of George H. Benzenberg, Past-President, Am. Soc. C. E., John W. Alvord, *Chairman,* Charles F. Loweth, and T. Chalkley Hatton.

Revision of Method for Nominating Officers:

In recognition of a sentiment seemingly prevalent among the membership that the present method of electing Society officers is not all that it should be, it was voted that the President appoint a committee of three members of the Board to prepare an amendment to the Constitution for the purpose of improving the present method of nominating and electing officers of the Society, this amendment to be considered at the October Board meeting.

Certificates to Student Prize Winners

Each graduating student in the Oregon Agricultural College who is so fortunate as to earn one of the four yearly prizes given by the Portland Section, receives a certificate in the following form:

The Portland, Oregon, Section
of the
AMERICAN SOCIETY OF CIVIL ENGINEERS
takes pleasure in awarding this prize to

.....

for his paper entitled

.....

.....

This prize to be payment by the Section
of the entrance fee and first year's dues
as a
Junior Member of the Society

....

Secretary. *President.*

This, in itself, is a valuable memento, but perhaps even more esteemed will be the associations in a technical society that are forecasted. Other Local Sections that are following this same plan may well note the advantages of this type of certificate of award.

Problems in Constructing Brooklyn Bridge

Most members will doubtless be surprised to know that the builder of Brooklyn Bridge, which has been an outstanding engineering achievement for

fifty years, is alive to-day. Col. Roebling's reaction to the sketch of this bridge project (given on page 259 of August *Proceedings*), is an interesting commentary on this historic structure. In a letter to the Secretary he says, in part:

"Being the first bridge across the East River, it will always be known as 'The Brooklyn Bridge'. The striking and harmonious beauty of its outline when first seen depends on the proper proportion of the deflection of the main cables compared with the length of the span. The deflection adopted is $\frac{1}{12.5}$ of the span. The resulting curve of the cable satisfies the demand of the human eye perfectly. When the deflection is greater the proportions appear too heavy—when it is less the cables appear to be overstrained.

"Since the use of steel dominates the construction of most suspension bridges to-day, the Brooklyn Bridge Towers may be the last example of massive granite towers.

"In the construction of the bridge many new problems presented themselves and had to be overcome. The first borings for tower foundations on the New York side gave the appalling depth of 106 ft. below the water level—a depth never attempted before. Finally, a slight change in position reduced this by 20 ft.

"The main cables were not only much larger than those of the Cincinnati Bridge, but were the first ones made of steel wire, involving new methods of splicing wire and an increased number of strands composing the cable and greater difficulty in their regulation.

"The superstructure was at first intended to be of iron, even up to the time when specifications were written, but was at the last moment changed to steel, thereby reducing the total dead load by a considerable amount.

"The bridge was designed originally for highway purposes with only a single track roadway and narrow footwalk on each side. After the granite towers had been begun and built up a short height, it became only too evident that single roadways could not accommodate the vehicular travel which would increase by leaps and bounds. The small outer sidewalks were therefore abandoned and the openings between the vertical shafts increased, thereby giving the outer columns an appearance of undue slenderness. Railroad tracks and central promenade remained as designed.

"It had always been intended that the bridge should operate its own railroad trains. Cable propulsion was decided on, involving elaborate and expensive machinery. This was replaced by individual locomotives which, in turn, gave way to the present-day electric traction system.

"Originally the Brooklyn Bridge was owned by a private corporation with a limited number of stockholders—not more than six or eight altogether, of which the late Mr. Kingsley was by far the largest. After the work had gone on for about two years, it became evident that, owing to the increased cost and length of time of construction, a private company would not be a financial success. A bill was accordingly presented to the Legislature enabling the two cities of New York and Brooklyn to take over the interest of the private stockholders. This was accomplished in due course. I am constrained to say that nobody ever made any money out of the Brooklyn Bridge directly or indirectly. It is barely possible that some stock may have been given to Mr. Tweed for his supposed influence in getting funds from the cities, but he was out of the way long before that time arrived. The travel on the bridge, however, has been so great that it would have been a success financially. Then came the inevitable pressure of reduced tolls, a condition which every enterprise has to meet.

"The length of time consumed in building the bridge was largely due to enforced stoppages for want of cash. It was a time when the credit of New York was not as good as it is to-day.

"I find myself to-day (at 88) the sole survivor of my corps of assistants. Since that time many more suspension bridges have been built—each one with larger and larger cables. I need only point to the Williamsburg Bridge, the Manhattan Bridge, and the Camden Bridge as the last example.

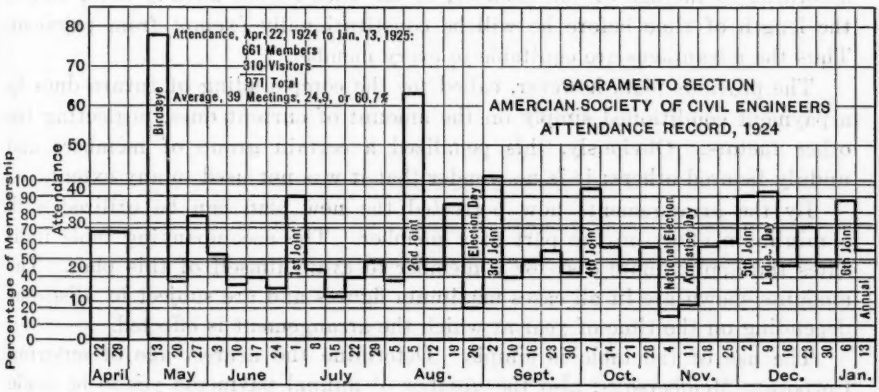
"I beg to close with the conviction that by increasing the number of cables the present length of spans of suspension bridges can easily be doubled.

"Very truly yours,

"W. A. ROEBLING."

Stimulating Attendance at Section Meetings

The Sacramento Section may well be proud of its attendance for 1924, judging by the graphic record reproduced herewith. The basis of these regular meetings is a weekly luncheon, which, quite evidently, is immensely popular.



The Section is also to be congratulated on its ingenuity in keeping before its members the question of regularity in support of these meetings. Similar expedients might be effective in other Sections for promoting interest in local Society activities.

Manchurian Railways

Any member visiting the Reading Room at Headquarters will note on the table two large and handsomely bound albums. On the cover of one appears the embossed silver figure of a dragon, traditional symbol of China. Following the prompting of curiosity he might investigate the contents of these books to his great enlightenment. They deal with the Chinese Eastern Railway, a far-flung Oriental line that has felt the impress of American engineering methods. One volume contains perhaps seventy-five large photographs, all hand-colored, portraying details of the line, its equipment, personnel, structures, engineering details, scenery, and people. The other gives statistics of this work, all in graphic form. Miniature locomotives, trains, cars, men, barrels and what not depict the recent growth of this remarkable railway. For the donation of this interesting exhibit, the Society is indebted to John F. Stevens, Hon. M. Am. Soc. C. E., whose great work on Asiatic railways has been a vital factor in their rehabilitation and to whom the books were a gift in recognition of his work.

Paid-Up Membership as a Substitute for Compounding Dues

A plan to effectuate paid-up membership in the Society was adopted, as a service to members, by the Board of Direction at its Salt Lake City meeting. Corporate Members desiring to pay all future dues in one lump sum can now do so on an extremely advantageous basis.

The new plan as specially arranged with an Insurance Company of excellent standing consists of buying an annuity in favor of the Society, the cash payment necessary to effect this being considerably less than either the sum provided for in the Constitution as compounded dues or the sum of the several annual amounts of regular dues, being equivalent to an investment at rates varying from 4½ to about 12½ per cent. The actual amount payable varies according to the age of the member, to the dues he has already paid, and to the length of time before he will be constitutionally exempt from payment. Thus the advantages are equitable to every member.

The previous plan, however, called for the compounding of future dues by a payment conditioned simply on the amount of current dues, neglecting the other factors. Obviously, this penalized a certain group of members and unduly favored others; it is no wonder that it was not used to any extent.

By the arrangements now perfected the new plan can be utilized with a minimum effort on the part of a member. The accompanying table indicates the approximate cost for a member to avail himself of this plan. The amounts shown are in all cases maximum figures and are subject to discount depending on the time of year at which the arrangement is effected.

The use of the table is simple. Determine the nearest age of entering Corporate Membership; also the number of annual payments yet to be made under the terms of the Constitution (Article IV, Section 7, on page 95 of the 1925 Year Book). With these data as arguments, the body of the table gives the maximum amount to be paid. This figure applies only if the arrangement is completed on December 31 of any year; if completed before December 31, it is subject to a discount at the annual rate of 5% for the remainder of the year.

To take a specific example: A member desiring to pay up his $20 annual dues as of September 1, 1925, has the following conditions: Born, August, 1876; became a Corporate Member, December, 1907. He was therefore 31 years old when he became a Corpoate Member (Argument 1). The number of years' dues to be paid varies for different conditions according to the Constitution. In this case a total of 35 years is required before exemption. He has already paid 19 (in advance) leaving 16 payments yet to be made (Argument 2). With these data as arguments the table shows that on December 31, 1925, $222 will pay up his $20 dues. On September 1 this amount is subject to a discount of $\frac{4}{12} \times 0.05 \times \$222 = \$3.70$, leaving $218.30 for the payment as of September 1, 1925, as compared with a total of $320 required if extended over the sixteen years. The payments for other amounts of annual dues ($15 or $25) would be in proportion.

TABULAR BASIS FOR COMPUTING COST OF $20 PER YEAR ANNUITY CONTRACT TO AMERICAN SOCIETY OF CIVIL ENGINEERS IN LIEU OF ANNUAL DUES.

(Figures shown are for immediate first payment and are subject to 5% pro rata discount for completion of contract prior to December 31.)

(For $25 per year Annuity Contract add 25%)
(For $15 per year Annuity Contract deduct 25%)

Nearest Age Upon Entry to Corporate Membership.	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	Nearest Age Upon Entry to Corporate Membership.
55											255	248	240	232	225	217	210	202	195	187	179	170	162	154	145	136	126	116	105	93	80	55
54											259	252	245	237	229	221	214	206	198	190	181	173	165	156	147	137	127	117	106	93	80	54
53											264	256	249	241	233	225	218	210	201	193	184	176	167	158	149	139	129	118	106	94	81	53
52											268	260	253	245	237	229	221	213	204	196	187	178	169	160	150	140	130	119	107	95	81	52
51											272	264	257	249	241	233	225	216	207	199	190	181	172	162	152	142	131	120	108	95	81	51
50											276	268	261	253	245	236	228	219	210	201	192	183	174	164	154	143	132	121	108	95	81	50
49											279	272	264	256	248	239	231	222	213	204	195	185	176	166	155	144	133	121	109	96	81	49
48											283	275	267	259	251	242	234	225	216	207	197	188	178	167	157	146	134	122	110	96	82	48
47											286	278	270	262	254	245	237	228	219	209	200	190	180	169	158	147	135	123	110	97	82	47
46											289	281	273	265	257	248	239	231	221	212	202	192	182	171	160	148	136	124	111	97	82	46
45											292	284	276	268	260	251	242	233	224	214	204	194	183	172	161	149	137	124	111	97	82	45
44										299	292	284	276	268	260	251	242	233	224	214	204	194	183	172	161	149	137	124	111	97	82	44
43									306	299	292	284	276	268	260	251	242	233	224	214	204	194	183	172	161	149	137	124	111	97	82	43
42								313	306	299	292	284	276	268	260	251	242	233	224	214	204	194	183	172	161	149	137	124	111	97	82	42
41							320	313	306	299	292	284	276	268	260	251	242	233	224	214	204	194	183	172	161	149	137	124	111	97	82	41
40						327	320	313	306	299	292	284	276	268	260	251	242	233	224	214	204	194	183	172	161	149	137	124	111	97	82	40
39					333	327	320	313	306	299	292	284	276	268	260	251	242	233	224	214	204	194	183	172	161	149	137	124	111	97	82	39
38				340	333	327	320	313	306	299	292	284	276	268	260	251	242	233	224	214	204	194	183	172	161	149	137	124	111	97	82	38
37			346	340	333	327	320	313	306	299	292	284	276	268	260	251	242	233	224	214	204	194	183	172	161	149	137	124	111	97	82	37
36		352	346	340	333	327	320	313	306	299	292	284	276	268	260	251	242	233	224	214	204	194	183	172	161	149	137	124	111	97	82	36
35	358	352	346	340	333	327	320	313	306	299	292	284	276	268	260	251	242	233	224	214	204	194	183	172	161	149	137	124	111	97	82	35
34	360	354	348	342	336	329	323	316	309	302	294	286	278	270	262	253	244	235	226	216	206	196	185	174	162	150	138	125	112	97	82	34
33	363	357	351	345	338	332	325	318	311	304	297	289	281	273	264	256	247	238	228	218	208	198	187	175	164	152	139	126	113	98	82	33
32	365	359	353	347	341	334	328	321	314	306	299	291	283	275	267	258	249	240	230	220	210	199	188	177	165	153	140	127	113	98	83	32
31	367	361	355	349	343	337	330	323	316	309	301	294	286	277	269	260	251	242	232	222	212	201	190	179	166	154	141	128	114	99	83	31
30	369	363	357	351	345	339	332	325	318	311	303	296	288	280	271	262	253	244	234	224	214	203	192	180	168	155	142	129	114	99	83	30
29	371	365	359	353	347	341	334	327	320	313	305	298	290	281	273	264	255	245	236	225	215	204	193	181	169	156	143	129	115	100	84	29
28	372	366	361	355	349	342	336	329	322	315	307	299	291	283	274	265	256	247	237	227	216	205	194	182	170	157	144	130	116	100	84	28
27	374	368	362	356	350	344	337	331	324	316	309	301	293	285	276	267	258	248	238	228	218	207	195	183	171	159	145	131	116	101	85	27
26	375	370	364	358	352	346	339	332	325	318	310	302	294	286	277	269	259	250	240	230	219	208	196	184	172	160	146	132	117	101	85	26
25	377	371	366	360	353	347	341	334	327	320	312	304	296	288	279	270	261	251	241	231	220	209	197	185	173	160	146	132	117	102	86	25

Years of Dues to Be Paid.

In effect this plan is a tri-partite arrangement, involving the member, the Society, and the Insurance Company. The member pays the money to the Company which agrees to pay the Society the $20 annually on January 1 for as long as the member is required to pay dues or until his previous decease. Thus the Society will not handle the money (checks to be payable to the Insurance Company), but will furnish the member with application, complete data, and, later, the receipt.

Those who have studied this plan have come to the conclusion that it is economical as well as strictly fair to all Corporate Members. Further, it is believed to be a distinct service to the membership. The Secretary's Office is prepared to furnish further details of the plan to any member interested.

Memoir to John H. Dunlap

The last inadequate measure of respect that the Society can pay to a departed officer, beloved and honored, is the printing of a silent memoir. Such a man was John H. Dunlap and such a memoir is printed in this number of *Proceedings*. How far any such tribute must fail to do justice to a strong character like Mr. Dunlap every member will realize, and yet at the same time he will recognize how well the Committee which prepared this testimonial has caught the spirit of his life and work. Every Society member, every college student, can catch an inspiration from his life and sayings. John H. Dunlap is not dead—he still lives in the hearts of a host of loving friends. The memoir presented herewith is but a testimony of the vital influence he still exerts on the Society and on American engineers.

Discourage Competition in Bidding for Engineering Services

The resolution adopted by the Board of Direction at the Salt Lake City Meeting (see page 298) condemning the practice of competitive bidding for engineering services, calls attention to an evil, which, unless properly controlled, bids fair to work great hardship on engineers. This practice puts all engineers entering into competition on the basis of commercialism without regard to professional ability for which every real engineer values his services. Many other cases of professional service can be thought of, to which the public officials who sponsor this method would never dream of applying it. In their attitude they are making false economy in public administration for, although undoubtedly they may thus get work done more cheaply, just as surely it will not be done as effectively. For one thing, the more capable engineers will not lend themselves to being thus exploited. This suggests that the remedy for the condition is partly in the hands of engineers themselves, in that by refusing to become parties to such unethical practice, they can force municipal employers to select their technical advisers on the basis of merit or suitability, and on that basis alone. It is of interest to note that such a procedure is in direct line with the Society's Code of Professional Ethics.

Future Aims and Activities of the Society

How can the Society increase in usefulness, service, and public esteem? This, substantially, is the question to which the Board of Direction addressed

itself when it recently authorized a new committee from its membership to study the Society's proper aims and activities (see page 300). Already that Committee has visualized its opportunity. According to its first announcement, it conceives the following possibility for future Society accomplishment:

OUTLINE OF SCOPE OF COMMITTEE ON AIMS AND ACTIVITIES

The aim of the Society should be to function so that every member of the Profession will feel the necessity of his being a member of the Society, participating in its activities, and sharing in its benefits.

In order to attain this aim, the Committee conceives its functions to be:

1.—To outline those activities that will conduce to this end:

(*a*).—*Technical.*—To consider such development of the technical activities of the Society as will make them of maximum value to the individual member.

(*b*).—*Professional.*—To consider how best to develop and apply the broad principles of professional relations to the every-day practice of the individual engineer.

(*c*).—*Public Relations.*—(To be outlined later.)

2.—To present these activities to the members of the Society so that each of them will be aroused to a renewed appreciation of and a greater interest in its work.

3.—To present these activities to Engineers not yet affiliated with the Society so that they will be drawn into participation in its work and benefits.

With these ideals every member must be in sympathetic accord. The Committee is to report to the October Board meeting, if possible, and Chairman Paul will welcome concrete suggestions, criticisms, or amplifications of this program.

University of Tennessee Has Engineering Prize of Society Membership

Through the generosity of P. J. Kruesi, of Chattanooga, Tenn., a member of the Board of Trustees of the University of Tennessee, graduating students are offered prizes consisting of the payment of the initiation fee and of the first year's dues in the leading engineering societies. This commendable form of benefaction seems to be gaining in popularity. It has brought with it one somewhat embarrassing complication, namely, the difficulty of so expediting the usual machinery incident to the scrutiny of applicants for admission and transfer as to make the election of the new Junior member as gracious an act as was the gift of the prize. The Society's Committee on Student Chapters is now considering this difficulty.

Records of First World Power Conference

The item among the book notices (page 316) covering the Transactions of the First World Power Conference, London, 1924, deserves more than passing notice. The four handsome volumes in question contain the papers presented and the discussions that they provoked. A fifth volume, containing an elaborate index, is in preparation.

Few engineering congresses have left so extensive and elaborate a record of their proceedings; and few have excited such widespread interest, if the use of this report may be taken as an indication. The Conference brought together delegates of many countries, as well as a large number of other engineers from all quarters of the globe; the papers were of high quality, so that the published record is a valuable summary of power resources and their present utilization.

The scope of the Conference was a wide one. The available and utilized power resources of the world were reported upon very fully, the papers on this subject filling an entire volume. Upon the production of water power, the preparation of fuels, and the production of steam power, the contributions were sufficient to fill another volume which is a comprehensive review of the best practice of various lands in the development of water powers, water-wheel design, the distillation of coal, producer gas, peat, shale-oil, and in the utilization of wood waste, as well as of modern steam power plant design and practice.

The subjects contained in Volume III deal with internal combustion engines, gas, such sources of power as wind, alcohol, and natural steam, the transmission and distribution of power by electricity, research, standardization, and illumination.

Papers on a variety of subjects appear in Volume IV. The varied uses of power in industry and for domestic purposes, in electro-chemistry and electro-metallurgy, and for transport on land and sea, are discussed and described. Various economic and financial problems are treated, as are the governmental policies of various countries. Several papers on education, health, and publicity conclude the group.

A work so broad in scope and so varied in character cannot fail to offer something of interest to every engineer, whether he deals with the production of power or its use. The list of contributors includes many of the best authorities and the articles, with their numerous illustrations and maps, give a graphic picture of the present state of power engineering.

Norcross Memorial

The many friends and associates of the late Director Paul H. Norcross have instituted measures to perpetuate his memory. It is proposed to erect on the campus of the Georgia Institute of Technology in Atlanta a marble bench holding a bronze tablet that will note succinctly his main accomplishments. In this movement are represented various National Engineering Societies; the Local Section of the Society in Atlanta; and his Alma Mater, the Georgia Institute of Technology. No general appeal for funds is being made; the Committee is quietly enlisting the co-operation of those who feel it a privilege to have a share in this Memorial. The following members of the Society constitute a Joint Committee: George H. Fenkell, representing the Society; Harrison P. Eddy, representing the Institute of Consulting Engineers; James E. Gibson, representing the American Water Works Association; and George W. Fuller, representing the Chicago Board of Review. Co-operating with them is a Local Committee from the Atlanta Section, consisting of H. F. Wiedeman, Assoc. M. Am. Soc. C. E., B. M. Hall, M. Am. Soc. C. E., and J. H. Johnston, M. Am. Soc. C. E.

Engineer and Pioneer

History was made at Marias Pass, Montana, in December, 1889, when John F. Stevens, Hon. M. Am. Soc. C. E., discovered the lowest and most direct access to the Pacific Northwest. The Great Northern Railway memorialized the epochal event by dedicating on July 21, 1925, a statue to Mr. Stevens at

that spot. As an additional honor to the Society, Robert Ridgway, its President, was privileged to deliver the principal address. In paying a tribute to Mr. Stevens as typical, in experience and character, of many engineers of the older generation, Mr. Ridgway said in part:

"This western section of our country was a great school for engineers during the period of 40 to 50 years ago. It took strong men to pass successfully through such a school. Only those who were sound physically, mentally and morally were graduated; the others gave up or fell by the wayside. The training developed self-reliance, resourcefulness, initiative and a good knowledge of men. There could be no leaning on others in an emergency. That would have meant failure. Each man stood on his own feet and faced the difficulties as they arose, taking each one as a matter of course and regarding the overcoming of obstacles as a part of the day's work. The men so trained were in their way pioneers. They blazed the trail, so to speak, for others to follow because they had few precedents to guide them. Without men of this type our great western country would be decades behind in its development. No task

was too great for them to undertake. They possessed a large measure of common sense which, after all, constitutes at least 90% of the equipment of the mind of a successful man. They advanced to success not because they were merely technicians but because the man was behind the engineer, and as a reward for their accomplishments they were willing to let the work which they did speak for them. In such a school John F. Stevens was trained.

"The engineer's service to his fellow man is usually unobtrusive. Most of his best work is done in the quiet and is not known to the public. When some achievement excites the imagination of the latter, the engineer is placed on the front page but he is conscious that the spectacular affair which is so advertised does not usually represent his best work. That to which he gives his best thought and energy frequently passes by unnoticed because it has no spectacular features about it. I do not believe that the good engineer does his work merely to invite public recognition. The consciousness of having done it well is a satisfaction in itself and it is always a privilege to be given the opportunity to serve. I frequently wonder what would happen to the engineer if his name was always on the front pages of our newspapers. I question if he would continue to be the man of the same efficient, constructive force that we like to think he is. Men like Stevens rise through transcendent ability and force of character, not through advertising as that word is generally understood."

Progress in the Investigation of Engineering Education

Assuming that engineering education in the United States is lacking certain elements required to bring it to its full condition of usefulness, is the fault with the preparation of students, with the unfitness of the material, with the curricula, or with the teaching? The attention of the Society for the Promotion of Engineering Education was focused on these and other questions at the Annual Meeting at Union College, Schenectady, N. Y., June 18, 1925, when its Board of Investigation submitted various progress reports. Not a few of these important questions will appeal to the practicing engineer. He will probably agree, for example, that students show marked deficiencies in elementary mathematics and English—and he might not limit his criticism to the student only. The fact that one student in every eight admitted to engineering colleges a year ago was "conditioned" (lacking) in mathematics illustrates the handicaps under which the college boy and his instructor are laboring. This condition exists in spite of the fact, as proved conclusively by records, that undergraduate engineering students are a select group mentally and well above the average of collegiate students generally. Half the students made their decisions to study engineering before their last year in high school; evidently it behooves parents and teachers to advise early and—what is more to the point—understandingly. Engineers could not be of greater service than by insuring that high school boys do not enter engineering work under false impressions.

The studies of the Board have extended beyond the colleges to their graduates with fruitful results. Many young engineers were found to be unsuited for particular jobs—hence the expensively large turnover in the first two years of active practice. Many graduates feel that their courses were deficient in economics and business training. At the same time there is a firm conviction that the technical parts of the course are the real foundations of training.

Whatever the opinion of the undergraduate there is no question as to the value placed by the practicing engineer on the study of English.

This brief review only scratches the surface of the extensive work already done by the investigation. Engineers all recognize the vital importance of constantly improving American technical education. Although the Society is officially active in the present studies there is wide scope for constructive advice and criticism by individual members. Such will be welcomed by the Board of Investigation of the Society for the Promotion of Engineering Education. Address the Director, 33 West 39th Street, New York, N. Y.

Structural Division to Discuss Unit Stresses

The Executive Committee of the Structural Division is impressed with the need of a more extensive discussion of the question of Stresses in Structural Steel. This subject, brought up by the report* of the Society's Special Committee at the 1925 Annual Meeting, has occasioned considerable interest and difference of opinion. Accordingly, to crystallize further views on this important subject, the Structural Division will hold a special meeting at 7:30 P. M., in the Engineering Societies Building, New York City, October 28, 1925. The general subject will be "Unit Stresses in Steel and Other Structural Material with Special Reference to Building Construction". All members of the Society and other engineers, whether or not members of the Structural Division, are cordially urged to be present and take part in this open meeting.

More About Oil Fires

An oil fire is spectacular, expensive, and dangerous. Extensive studies to determine the means of combatting it have been explained by H. H. Hall, M. Am. Soc. C. E., in the May, 1925, *Proceedings*. Later experiments which Mr. Hall describes in *Mechanical Engineering* for July (page 540), have determined the physical conditions causing a tank of burning oil to foam over. As the more volatile components of the oil burn on the surface, the top layers become heavier and sink to a depth where they are cooled by the lower layers. Thus, the lower limits of this hot zone are being extended downward and finally reach water that has separated from the oil and gravitated to the bottom of the tank. The resultant formation of steam is the direct cause of the "boil-over". One other condition is necessary—that the oil shall possess the viscous characteristics causing it to foam rather than merely to bubble. Thus, the danger of a boil-over is practically limited to crude oils, which have the required viscosity as well as the content of water. Further, the time of the boil-over may be predicted by gauging the advance of the hot zone (by various devices) downward toward the water layer. In conjunction with Mr. Hall's paper before the Society, this article provides a quite complete review of the cause as well as the control of dangerous oil boil-overs.

* *Proceedings*, Am. Soc. C. E., March, 1925, Papers and Discussions, p. 392.

Report of Tellers on Second Ballot for Official Nominees

"33 West 39th Street, New York, N. Y.,
"August 15, 1925.

"MR. GEORGE T. SEABURY, *Secretary*,
AMERICAN SOCIETY OF CIVIL ENGINEERS.

"DEAR SIR: The Tellers appointed to canvass the Second Ballot for Official Nominees report, as follows:

"Total number of ballots received		5 259
"Deduct: Ballots from members in arrears of dues	238	
" " " who have died since voting	1	
" with illegible signatures	5	
" unsigned	22	
"Total ballots not canvassed		266
"Ballots canvassed		4 993

"For President:

George S. Davison	2 975
John F. Coleman	1 970
Void	4
Blank	44
Total	4 993

"For Vice-President, Zone I:

Ira W. McConnell	754
Allen Hazen	818
Void	0
Blank	20
Total	1 592

"For Vice-President, Zone IV:

Walter L. Huber	909
Void	0
Blank	113
Total	1 022

"For Director, District No. 3:

Frank M. Williams	253
Void	0
Blank	30
Total	283

"For Director, District No. 8:

Alonzo J. Hammond	249
Void	0
Blank	16
Total	265

"For Director, District No. 5:

Donald H. Sawyer	168
Harry A. Lane	94
Allen J. Saville	84
Void	0
Blank	5
Total	351

"For Director, District No. 9:

Charles H. Paul	225
Void	0
Blank	14
Total	239

"For Director, District No. 7:

T. Chalkley Hatton	306
Scattering	2
Void	0
Blank	12
Total	320

"For Director, District No. 12:

Edward G. Taber	181
Void	0
Blank	4
Total	185

"Respectfully submitted,
"W. F. REEVES, *Chairman*,

"HARRY D. WINSOR,
J. H. MINER,
ROBERT W. HOPPEN, JR.,
J. D. ANDERSON,
R. M. BURKHALTER,
"GEORGE W. GATES,
ROGER W. ARMSTRONG,
C. H. CROOKS,
SYDNEY WILMOT,
W. D. AIKEN,
"Tellers."

Local Sections*

Arizona.—Summer Meeting. July 17, 1925. A drive was taken at 2:00 P. M., to points of interest near Flagstaff and was followed by a Reception and Informal Dinner. In the evening a paper entitled "Flagstaff Water-Works Project", was read by Mr. R. E. McDonnell. A general discussion followed.

July 18, 1925. At 8:00 A. M., an inspection trip was made to Flagstaff Water-Works Project and San Francisco Mt. Boulevard. The afternoon and evening were devoted to the presentation and discussion of technical papers. Mr. W. W. Lane spoke on "A Proposed Highway Program for Arizona", and was followed by Capt. J. B. Wright who presented a paper entitled "General Discussion of County Highway Location and Construction". "Sewerage System of New Westminster, B. C.", was discussed by Capt. J. W. B. Blackman, and Prof. G. E. P. Smith spoke on "Losses of the Ground-Water Supply through Transpiration of Trees and Salt Grass".

July 19, 1925. A drive was taken to the Grand Canyon at 7:30 A. M., followed by a luncheon at El Tovar Hotel. Points along the rim of the Grand Canyon were visited in the afternoon, and the evening was devoted to round table discussion of the Colorado River problems.

Cincinnati.—June 18, 1925. The Section joined with the Engineers' Club of Cincinnati in an outing to the Zoological Gardens. The entertainment consisted of a dinner, concert, ice skating exhibition, and dancing. Attendance 228.

Colorado.—July 13, 1925. A dinner was given at the Mount Vernon Country Club in honor of President Robert Ridgway. This was one of the few social meetings that have been held by the Section and was a most enjoyable one. President Ridgway gave a brief outline of Society activities, plans, and functions, and Secretary George T. Seabury spoke informally. Attendance 50.

Louisiana.—July 17, 1925. A business meeting was held at Tulane University, New Orleans, where matters of local interest were transacted. Attendance 9.

Portland (Ore.).—June 3, 1925. The meeting was held at the University Club. The prizes in the 1925 Prize Essay Contest consisting of Junior Memberships in the Society and dues for one year, were presented by Director George C. Mason. The four successful candidates were as follows: Mr. Carroll Bullen, for a paper on "Practical Design of Semi-Dry Concrete"; Mr. H. Franklin Jerauld, for his paper on "Underground Water"; Mr. Fred Ingram, whose paper was on "Flood Control in the Sacramento Valley"; and Mr. O. N. Olson, for a paper entitled "Use and Misuse of Highways". An address was given by Gustav Lindenthal, M. Am. Soc. C. E., who spoke on various economic factors with relation to engineers. A general discussion of the subject followed. Attendance 44.

* For list of Local Section Officers, Rules, etc., see 1925 Year Book, p. 48.

Sacramento.—May 19, 1925. Mr. R. M. Durbin, of Walnut Grove, Calif., addressed the Section on "The Attitude of Farming Interests in the Sacramento Delta Toward the Proposed Ship Canal". Attendance 18.

June 2, 1925. T. E. Stanton, Jr., Assistant State Highway Engineer, spoke on "The Financial Situation of the State Highway Commission". Attendance 18.

June 16, 1925. Robert L. Jones, Director of the Sacramento Municipal Utility District, addressed the Section on "The Organization and Activities of the State Reclamation Board", for which he is Hydraulic Engineer. Attendance 20.

June 23, 1925. Mr. R. S. Badger, of the State Highway Commission, spoke on the recent traffic census taken by the Commission. Attendance 23.

June 24, 1925. Secretary George T. Seabury and Director Henry D. Dewell were the guests of the Section at a dinner given at the Hotel Sacramento. After being welcomed by President Joseph C. Boyd and by Section Past-Presidents Edward Hyatt, Jr., and C. S. Pope, Mr. Seabury gave an interesting and instructive talk on the finances and administration of the Society and the personnel of the New York office. Attendance 29.

San Francisco.—April 21, 1925. The meeting was held at the Engineers' Club and was preceded by a dinner at which seventy-two members and guests were present. S. B. Morris, President of the Los Angeles Section, gave a short talk, during which he discussed the relative growths of the Los Angeles and San Francisco Sections. Mr. G. A. M. Elliott addressed the meeting on "General Features of the Calaveras Development of the Spring Valley Water Company", of which he is Chief Engineer, illustrating his remarks with stereopticon views. T. W. Espy, Construction Engineer of the Spring Valley Water Company, spoke on "Construction Features of the Calaveras Dam Development". Attendance 100.

Engineering Societies Library

The services of the Engineering Societies Library are available to all members who wish searches, copies, translations, etc., or advice on technical literature. A collection of modern books is also available for loan to members in North America, at moderate rentals. Correspondence should be addressed to the Director, Engineering Societies Library, 29 West 39th Street, New York, N. Y., who will gladly give information concerning the charges for the various kinds of work. A more comprehensive statement in regard to this matter will be found on pages 71 and 72 of the Year Book for 1925.

Book Notices*

(July 1 to July 31, 1925)

Effective Regulation of Public Utilities. By John Bauer. N. Y., Macmillan, 1925. 381 pp., 6 x 8 in., cloth. $2.50.

The purpose of this book is to consider critically the existing policies and methods by which the regulation of public utilities has been attempted; to show the inadequacy and deficiency of the existing machinery; and to suggest constructive measures for a realizaton of the fundamental purposes of regulation.

Die Eisenkonstruktionen. By L. Geusen. Fourth Edition. Berlin, Julius Springer, 1925. 310 pp., illus., diagrams, 11 x 8 in., boards. 21 gm.

This course of study in the design of steel buildings and bridges is intended to teach the points of view which are of importance in design and to illustrate their proper application.

Die Elastischen Platten. By A. Nádai. Berlin, Julius Springer, 1925. 326 pp., illus., diagrams, tab., 9 x 6 in., boards. 24 gm.

This extended mathematical study of the changes of form of and the internal stresses in slabs and plates aims to acquaint mechanical and structural engineers with the best methods for determining the effects of loads on slabs.

Hydraulics. By R. L. Daugherty. Third Edition. N. Y., McGraw-Hill Book Co., 1925. Illus., diagrams, 6 x 9 in., cloth. $3.00.

This edition, entirely rewritten, is intended as a text for students who must cover a wide field in hydraulics in a limited time. Therefore, attention is given mostly to matters of fundamental importance.

Interpretation of Topographic and Geologic Maps. By C. L. Dake and J. S. Brown. N. Y., McGraw-Hill Book Co., 1925. 355 pp., illus., map, diagrams, 5 x 7 in., cloth. $3.00.

This volume presents a systematic course of instruction on the interpretation of maps. The text refers, for illustration, to the maps of the United States Geological Survey for each topic.

Plane and Spherical Trigonometry. By Claude Irwin Palmer and Charles W. Leigh. Third Edition, Enlarged. N. Y., McGraw-Hill Book Co., 1925. 221 + 136 pp., tab., 9 x 6 in., cloth. $2.50.

In this textbook those parts of trigonometry which are necessary to a proper understanding of the courses taken in schools of technology are emphasized. It includes five-place logarithmic and trigonometric tables.

Principles of Naval Architecture and Warship Construction. By G. C. Manning and T. L. Schumacher. Annapolis, Md., U. S. Naval Institute, 1924. 353 pp., illus., pl., diagrams, 9 x 6 in., cloth. $5.00.

* The statements made in these notices are taken from the books themselves, and this Society is not responsible for them. Unless otherwise specified, the books in this list have been donated by publishers.

This book, intended primarily for the use of U. S. Midshipmen, is planned to meet the needs of the operator, not the designer. Commencing with a brief account of the changes in ships from the Civil War to the present day, it gives the fundamentals of naval architecture with the steps from the initial conception of a new design for a vessel to its completion.

Resistance of Express Trains. By C. F. Dendy Marshall. Lond., Railway Engineer, 1925. 76 pp., illus., tab., 9 x 12 in., cloth. £1.

Mr. Marshall here gathers the published results of experiments dealing with the resistances on steam railroads, including the effect of winds. He makes definite proposals which he believes would lead to a reduction of resistance, to smoother running, and to economy.

Space and Time; An Experimental Physicist's Conception. By Carl Benedicks. N. Y., E. P. Dutton & Co., n.d. 98 pp., 8 x 5 in., cloth. $2.00.

This little volume, based on a lecture before the Students' Club of the University of Stockholm, is a discussion of the ideas of space and time as developed by Einstein. The author's views on these fundamental concepts differ from those of Einstein's adherents and lead him to an emission theory of light. Sir Oliver Lodge contributes an interesting introduction.

Space, Time, Motion. By A. V. Vasiliev. N. Y., Alfred A. Knopf, 1924. 232 pp., 8 x 5 in., cloth. $2.50. (Gift of S. Vasiliev.)

Starting with Pythagoras, Professor Vasiliev traces the changing views of the philosophers concerning space, time, motion, and their relations to each other. His book is a readable account of the gradual evolution of the ideas now embodied in the theory of relativity.

Who's Who in Engineering, Second Edition, 1925. By John William Leonard. N. Y., Who's Who Publications, Inc., 1925. 2483 pp., 10 x 6 in., cloth. $10.00.

This second edition shows an increase in size of nearly one thousand pages and now contains brief biographies of more than eighteen thousand engineers mostly from North America. In addition to the alphabetical arrangement, a geographical index is supplied.

Additions to the Reading Room

Practical Road-Building Throughout Canada; A Manual. By E. A. James, M. Am. Soc. C. E. Toronto, E. A. James, [c. 1925]. 227 pp., illus., diagrams, 9 x 6 in., cloth. $2.50. (Gift of the Author.)

The object of this book has been to assist the practical road builder, as far as Canada is concerned. The author has incorporated his experiences which, after a dozen years, have strengthened his belief that the art of road building must be varied to meet local conditions of climate, soil, supplies, and finance.

The Transactions of the First World Power Conference, London, England, June 30 to July 12, 1924. Lond., Percy Lund, Humphries & Co., Ltd. 4 vol., illus., diagrams, pl., 10 x 6 in., cloth. £10. (Gift of American Committee, World Power Conference.)

These volumes contain the papers and discussions that were presented at the First World Power Conference at London, England, by eminent engineers from various countries. The Contents are as follows: Vol. I, Power Resources of the World Available and Utilised; Vol. II, Water Power Production, Preparation of Fuels, Steam Power Production; Vol. III, Internal Combustion Engines, Gas and Fuel Section, Power from Other Sources, Power Transmission and Distribution, Standardization and Research, Illumination; Vol. IV, Power in Industry and Domestic Use, Power in Electro-Chemistry and Electro-Metallurgy, Power for Transport, Economic Aspects of Power Resources, Education Health Publicity.

Current Civil Engineering Literature

Key to Abbreviated References to Publications Indexed*

Abbreviated References.	Publication.	Place.
Am. C. Inst.	*American Concrete Institute, Proceedings* (Y.)	Detroit
A. I. E. E.	*American Institute of Electrical Engineers Journal* (M.)	New York
A. R. E. A.	*American Railway Engineering Association, Proceedings* (Y.)	Chicago
A. S. T. M.	*American Society for Testing Materials, Proceedings* (Y.)	Philadelphia
Am. Soc. C. E.	*American Society of Civil Engineers, Proceedings* (M.)	New York
Am. Soc. Mun. Impvts.	*American Society for Municipal Improvements, Proceedings* (Y.)	New York
Am. W. W. Assoc.	*American Water Works Association, Journal* (Bi-M.)	Baltimore
Am. Wood Prs. Assoc.	*American Wood Preservers Association, Proceedings* (Y.)	Chicago
Ann. P. et C.	*Annales des Ponts et Chaussées* (Bi-M.)	Paris
Ann. T. P. Belg.	*Annales des Travaux Publics de Belgique* (Bi-M.)	Brussels
Assoc. Ing. Gand.	*Annales de l'Association des Ingénieurs sortis des Ecoles Spéciales de Gand* (Q.)	Ghent
Bost. Soc. C. E.	*Boston Society of Civil Engineers, Journal* (M.)	Boston
Can. Engr.	*Canadian Engineer* (W.)	Toronto
Cornell C. E.	*Cornell Civil Engineer* (M.)	Ithaca
Dock & Harbour	*Dock and Harbour Authority* (M.)	London
Eng.	*Engineering* (W.)	London
Eng. & Contr.	*Engineering and Contracting* (W.)	Chicago
Eng. Inst. Can.	*Engineering Institute of Canada, Journal* (M.)	Montreal
Eng. N. R.	*Engineering News-Record* (W.)	New York
Engrs. Soc. Pa.	*Engineers' Society of Pennsylvania, Journal* (M.)	Harrisburg
Engrs. Soc. W. Pa.	*Engineers' Society of Western Pennsylvania, Journal* (M.)	Pittsburgh
Engr.	*Engineer* (W.)	London
Engrs. & Eng.	*Engineers and Engineering, Engineers' Club of Philadelphia* (M.)	Philadelphia
Gen. Civ.	*Le Génie Civil* (W.)	Paris
Gesund. Ing.	*Gesundheits Ingenieur* (W.)	Munich
Inst. C. E.	*Institution of Civil Engineers Minutes of Proceedings* (Q.)	London
Inst. Mun. & Co. Engrs.	*Institution of Municipal and County Engineers, Journal* (W.)	London
Int. Ry. Cong. Assoc.	*International Railway Congress Association, Bulletin* (M.)	Brussels
Land. Arch.	*Landscape Architecture* (M.)	Harrisburg
Mech. Eng.	*Mechanical Engineering* (M.) *Journal of the American Society of Mechanical Engineers*	New York
Mil. Engr.	*Military Engineer* (M.)	Washington
Min. & Metal.	*Mining and Metallurgy* (M.) *American Institute of Mining Engineers*	New York
Mun. & Co. Eng.	*Municipal and County Engineering* (M.)	Indianapolis
N. E. W. W. Assoc.	*New England Water Works Association, Journal* (M.)	Boston
N. Y. R. R. Club	*New York Railroad Club, Proceedings* (M.)	Brooklyn
Oest. Ing. Arch. Ver.	*Oesterreichischer Ingenieur und Architekten Verein, Zeitschrift* (F.)	Vienna
Power	*Power* (W.)	New York
Rev. Gen.	*Revue Générale des Chemins de Fer* (M.)	Paris
Ry. Age	*Railway Age* (W.)	New York
Ry. Eng. & Main.	*Railway Engineering and Maintenance* (M.)	Chicago
Ry. Rev.	*Railway Review* (W.)	Chicago
Schw. Bauz.	*Schweizerische Bauzeitung* (W.)	Zurich
Sci. Am.	*Scientific American* (M.)	New York
Soc. Ing. Civ. Fr.	*Société des Ingénieurs Civils de France, Mémoires et Comptes Rendus* (Q.)	Paris
Ver. deu. Ing.	*Verein deutscher Ingenieure, Zeitschrift* (W.)	Berlin
West. Ry. Club	*Western Railway Club, Proceedings* (M.)	Chicago
West. Soc. Engrs.	*Western Society of Engineers, Journal* (M.)	Chicago
Zeit. Bau.	*Zeitschrift fur Bauwesen* (Q.)	Berlin
Z. d. Bauver.	*Zentralblatt der Bauverwaltung* (W.)	Berlin

* Y = Yearly; Q = Quarterly; M = Monthly; F = Fortnightly; W = Weekly.

A. Applied Sciences

a. Processes of Calculation

2. Graphical and Nomographical Processes

Combination Templet and Scale.* F. M. Garnett. Eng. & Contr. July 1, '25.

Abaques pour le Calcul des Pièces Fléchies en Béton Armé.* (Charts for Calculating Cambered Pieces in Reinforced Concrete.) A. Roba. Ann. T. P. Belg. June, '25.

Eisenbeton-Nomogramme ohne logarithmische Teilungen.* (A Reinforced Concrete Nomogram without Logarithmic Divisions.) Felix Kann. Ver. deu. Ing. June 20, '25.

B. Applied Mechanics

a. Mechanics of Solids (Strength of Materials)

1. Processes of Measurement

Le Pendule Herbert. pour Essais de Dureté. Les Conditions de son Emploi: ses Applications.* (The Herbert Pendulum for Hardness Tests. Conditions for its use; its Applications.) Gen. Civ. June 6, '25.

Limite d'Elasticité et Module d'Elasticité dans les Produits Métallurgiques.* (Elastic Limit and Modulus of Elasticity in Metallurgical Products.) L. Guillet. Gen. Civ. June 27, '25.

2. Elastic Solids

Bruchversuch mit einem Druckglied aus umschnürtem Gusseisen.* (Fracture Investigation with a Compression Member of Wire Bound Cast Iron.) Emperger. Oest. Ing. Arch. Ver. June 12, '25.

4. Riveted Systems

British and American Practice in Structural Steel Design. Robins Fleming. Eng. June 5, '25.

Cantilever Balcony Framing for Special Conditions.* D. C. Coyle. Eng. N. R. July 9, '25.

6. Heterogeneous Solids (Reinforced Materials)

Tests of Bond Resistance in Reinforced-Concrete Beams.* W. A. Slater. Eng. N. R. June 25, '25.

b. Hydraulics

1. Processes of Measurement

Simple Solutions of Hydraulic Problems.* R. W. Angus. (Paper read before Int. Math. Cong. at Toronto.) Eng. & Contr. July 8, '25.

2. Physical Hydraulics

Ueber die Veränderung der Wandbeschaffenheit bei Modellversuchen.* (On Changing the Nature of Surfaces During Experiments with Models.) Armin Schlokitsch. Schw. Bauz. June 6, '25.

3. Industrial Hydraulics

Sheet Harbor Hydro-Electric Power System.* Can. Engr. June 16, '25.

Electrical Energy from Tides. Can. Engr. June 23, '25.

Hydro-Electric Development at the Muscle Shoals, Alabama.* Engr. Serial beginning July 3, '25.

Hydraulic Turbine of New Design Developed in England.* F. Johnstone-Taylor. Eng. N. R. July 9, '25.

Das Nidderkraftwerk bei Lissberg in Oberhessen.* (The Nidder Power Plant at Lissberg in Upper Hesse.) Lorenz. Zeit. Bau. Pt. 4, '25. (Ingenieurbauteil.)

Fragen der neueren Turbinentheorie.* (Questions Propounded by Recent Turbine Theories.) Schilhansl. Ver. deu. Ing. June 6, '25.

Zur Frage der Anfressungen von Turbinenlaufrädern.* (On the Question of the Corroding of Turbine Impellers.) Feifel. Ver. deu. Ing. June 13, '25.

c. Pneumatics

2. Physical Pneumatics

The Elements of the Kinetic Theory of Gases.* Eng. Serial beginning July 3, '25.

Weiterer Beitrag zur Theorie der Luftschrauben.* (Further Contribution to the Theory of Air Screws.) Th. Bienen. Ver. deu. Ing. June 20, '25.

C. Materials of Construction and General Processes

a. Lime, Cement, Mortar, Concrete, Brick, Bitumen, etc.

Le "Solomite", Nouveau Matériau de Construction en Paille Comprimée.* ("Solomite", a new Building Material of Compressed Straw.) Gen. Civ. June 13, '25.

Die sukünftigen schweizerischen Normen für Bindemittel auf Grundlage von Untersuchungsergebnissen der E. M. P. A. in den Jahren 1922 bis 1924.* (The Future Service Standards for Cement on the Basis of the Results of Researches by the E. M. P. A. in the Years 1922 to 1924.) M. Ros. Schw. Bauz. June 20, '25.

b. Metals

La Soudure Autogène du Métal Monel. (Autogenous Welding of Monel Metal.) Gen. Civ. June 6, '25.

Résultats Obtenus par l'Etude Dilatométrique des Fontes.* (Results Obtained by the Dilatometric Study of Castings.) P. Chevenard and A. Portevin. Gen. Civ. June 20, '25.

f. Rock Excavation, Mining, Rock Removal

The Hydraulic Removal of the Overburden from a Stone Quarry.* W. D. Armstrong. Eng Inst. Can. July, '25.

Neuere Ergebnisse des österreichischen Glimmerbergbaues.* (Recent Results of the Austrian Mica Mine Operations.) Hans Mohr. Oest. Ing. Arch. Ver. June 12, '25.

g. Execution of Works. Specifications

1. Of Masonry

Stabilité des Cheminées.* (Stability of Chimneys.) N. Peters. Ann. T. P. Belg. June, '25.

4. Of Metal

A New Type of Gas Storage Holder.* S. Miller. West. Soc. Engrs. June, '25.

Steel Construction.* Lee H. Miller. (Paper read before Am. Inst. Steel Constr.) Eng. & Contr. June 24, '25.

5. Of Reinforced Concrete

The Rational Design of Reinforced Concrete Tanks.* Arthur S. Milinowski. Mun. & Co. Eng. June, '25.

Pennsylvania Engineers Design Concrete Mixtures. T. P. Watson. (From paper read before Philadelphia Section.) Ry. Eng. & Main. June, '25.

x. Miscellaneous

Asphalt Flooring Laid in Sub-Zero Weather.* L. Garbi. Can. Engr. June 16, '25.

h. Foundations

Substructure for $50 000 000 Plant in a Bog.* F. W. Skinner. Eng. & Contr. June 17, '25.

Some Interesting Foundation Problems Result from Unstable Soils.* Ry. Eng. & Main. July, '25.

j. Piles and Pile-Driving

Subaqueous Pile Driving at Portland, Oregon.* Eng N. R. July 9, '25.

k. Tunnels and Tunneling-Shield

The Hetch Hetchy Tunnel.* Eng. & Contr. July 15, '25.

A New Device for Tunnel Work.* James F. Cohig. Eng. & Contr. July 15, '25.

1. Construction Machinery and Tools—Drainage

The Standardization of Crane Essentials. E. G. Fiegehen. Engr. June 5, '25.

Central Concrete Mixing Plants. (From *Proceedings* Am. Concrete Inst.) W. E. Hart. Eng. & Contr. June 24, '25.

Crane with Telescoping Boom.* Ry. Age. July 11, '25.

D. Highways

c. Construction

Small Bridges and Culverts. D. J. Kean. Can. Engr. June 16, '25.

Dirt Roads Improved by Lime Mixed with Surface Soil. E. J. McCaustland. (Paper read before Nat'l Lime Assoc.) Eng. N. R. June 25, '25.

Stage or Traffic Bound Construction.* R. H. Smith. (From paper read before County Comm. Assoc. of Ohio.) Eng. & Contr. June 1, '25.

Earth Road Grading.* L. R. Tillotson. Eng. & Contr. July 1, '25.

Highway Revetment.* L. E. Andrews. (From *Concrete Highway Magazine.*) Eng. & Contr. July 1, '25.

Modern Road Improvement Practice Sets High Standard.* L. E. Andrews. Eng. N. R. July 9, '25.

Cement Requirements for Modern Highway Construction. A. T. Goldbeck. (Paper Read before Am. Soc. Test. Mat.) Eng. N. R. July 9, '25.

Elevating Grader Operation.* J. L. Harrison. (From *Public Roads.*) Eng. & Contr. July 15, '25.

d. Maintenance

Maintenance of Creosote Block Pavements. A. D. Carpenter. (Paper read before Minn. Engrs. & Surveyors Soc.) Mun. & Co. Eng. June, '25.

Maintenance of Gravel Roads. J. T. Donaghey. (Paper read before conference on Highway Eng. Univ. of Mich.) Eng. & Contr. July 1, '25.

Road Maintenance in Michigan.* G. C. Dillman. Eng. & Contr. July 1, '25.

Resurfacing Work. Eng. & Contr. July 1, '25.

Everyday Detail of Earth Road Maintenance. B. H. Piepmeier. Eng. N. R. July 2, '25.

g. Machinery and Tools

Evolution of Highway Equipment Design.* O. L. Kipp. (Paper read before Am. Road Builders' Assoc.) Can. Engr. July 7, '25.

Elevating Grader Operation.* J. L. Harrison. (From *Public Roads.*) Eng. & Contr. July 15, '25.

h. Vehicles. Automobiles. Traffic

Relation of Road Surface to Automobile Tire Wear.* H. V. Carpenter. Eng. & Contr. July 1, '25.

x. Miscellaneous

Daylight Curves.* Eng. & Contr. July 1, '25.

Le IV Congres International de la Route Tenueà Seville en 1923. (The Fourth International Highway Congress Held at Seville in 1923.) Anu. P. et C. March, '25.

E. Bridges, Viaducts, and Arches

a. Timber Bridges and Viaducts

The Use of Plank in Floating Foot-Bridges.* A. C. Lieber, Jr. Mil. Engr. July, '25.

Bridge Construction by 6th Engineers.* A. P. von Deesten. Mil. Engr. July, '25.

b. Iron or Steel Bridges and Viaducts

The Towers, Cables and Stiffening Trusses of the Delaware River Bridge Between Philadelphia and Camden.* Leon S. Moisseiff. Engr. & Eng. June, '25.
Waterloo Temporary Bridge.* Engr. June 26, '25.
The British Standard Specification for Girder Bridges. Engr. July 3 '25.
Réparation par Soudure A l'Arc Electrique d'un Voussoir en Fonte d'un Arc du Pont de Suresnes sur la Seine près de Paris.* (Repair of a Cast-Iron Voussoir of an Arch of the Suresnes Bridge over the Seine near Paris by Electric Arc Welding.) L. de Boulongne. Ann. P. et C. March, '25.

d. Concrete and Reinforced Concrete Bridges and Viaducts

The Gandy Viaduct. Eng. June 12, '25.
Two Parkway Bridges Planned by Engineer and Architect.* A. G. Hayden. Eng. N. R. July 2, '25.
Construction de Ponte en Béton Armé sur La Marne.* (Construction of Reinforced-Concrete Bridges over the Marne.) M. Wahl. Ann. P. et C. March, '25.
La Restoration du Viaduc en Béton Armé Construit à Merxem, au-dessus du Canal Anvers-Liege. (Restoration of the Reinforced-Concrete Viaduct built at Merxem, over the Antwerp-Liége Canal.) MM. De Heem and Poelman. Ann. T. P. Belg. June, '25.
Le Pont en Béton Armé sur l'Oise, à Persan-Beaumont.* (The Reinforced-Concrete Bridge over the Oise at Person-Beaumont.) Ch. Dantin. Gen. Civ. June 6, '25.
Eine Eisenbetonbogenbrücke mit Zugband über die Alle bei Leissienen in Ostpreussen.* (A Reinforced Concrete Bridge with Tie Rods over the Alle at Leissienen in East Prussia.) v. Zychlinski. Z. d. Bauver. June 10, '25.

f. Suspension Bridges, Transfer Bridges

A Rigid Suspension Bridge Design with Wire Cables.* D. B. Steinman. Eng. & Contr. June 24, '25.

g. Swing, Bascule, Lift, Floating, Oscillating Bridges, Travelling Cranes

Delaware and Hudson Converts Fixed Truss into Lift Span.* J. McMartin. Ry. Eng. & Main. July, '25.
New York Central Builds New Ore Bridge at Ashtabula.* Ry. Age, July 18, '25.

x. Miscellaneous

The Bridge-Raising Program on the Allegheny River in Allegheny County. V. R. Covell. Engrs. Soc. W. Pa. Apr., '25.
The Waterproofing of Railroad Bridges.* G. A. Haggander. West. Soc. Engrs. June, '25.

F. Inland Waters

d. Diverting Dams, Locks, Lifts, Elevators, Inclined Planes

Automatic Spillway Gates of Black Canyon Dam.* Julian Hinds. Eng. N. R. June 25, '25.
The Sennar Dam on the Blue Nile.* Engr. July 3 '25.
La Construction des Portes d'Ecluses en Bois.* (Construction of Wooden Sluice Gates.) H. Meuris and H. Santilman. Ann. T. P. Belg. June, '25.
Neubau der 3. Schleuse Münster i. W.* (Reconstruction of the Third Lock at Münster, i. W.) Struckmann. Zeit. Bau. Pt. 4, '25. (Ingenieurbauteil.)

h. Boats and Barges

Ueber neuere Schwingentriebe und deren Anwendung für die Schiffahrt.* (On Modern Oscillating Drive and Its Use in Navigation.) Victor C. Lazarus. Oest. Ing. Arch. Ver. Serial beginning June 12, '25.

G. Maritime Works

c. Vessels and Maritime Navigation, etc.

Form Effects and Form Resistance of Ships.* W. G. A. Perring. Engr. June 5, '25.
Self-Unloading Bulk Cargo Vessels of the Great Lakes.* (Paper read before Soc. Nav. Arch. & Mar. Engrs.) Henry Penton and H. C. Sadler. Dock & Harbour, July, '25.
Les Paquebots "Champollion" et "Mariette-Pacha" de la Compagnie des Messageries Maritimes.* (The Packets "Champollion" and "Mariette Pacha" of the Compagnie des Messageries Maritimes.) Gen. Civ. June 20, '25.

d. Roads and Outer Harbors. Dikes and Jetties. Breakwaters

Buffalo Breakwater Superstructures.* Emile Low. Mil. Engr. July, '25.

g. Dredges and Dredging. Force Pumps. Refloating and Removing Wrecks. Ice-Breakers

Dredge Pump Maintenance.* J. H. Polhemus. (From Report of Comm. of Port of Portland, Ore.) Eng. & Contr. June 17, '25.
Salvaging the Motor Ship "Isonzo".* W. T. Stevenson. Mil. Engr. July, '25.

h. Wharves. Mooring Buoys. Harbor Equipment

Grain Handling and Design of Grain Elevators in Relation to Port Facilities.* E. F. Carter. (Paper read before Am. Assoc. Port Authorities.) Dock & Harbour, July, '25.
The Harbours of Western Australia.* J. M. Thompson. Dock & Harbour, Serial beginning July, '25.

Les Travaux d'Agrandissement et d'Amélioration du Port de Naples. (The Work of Enlarging and Improving the Port of Naples.) P. Boudreaux. Gen. Civ. June 27, '25.
Der neue Königsberger Seehafen.* (The New Königsberg Harbor.) Knoll and Schaff. Z. d. Bauver. April 1, '25.

j. Dockyard Machinery and Shipyards. Dry Docks

20-Ton Goliath Crane.* Engr. June 12, '25.
Modern Dock Equipment. H. J. Deane. (Paper read before London Cong. of the Inst. of Transport.) Dock & Harbour. Ser. begin July, '25.

H. Railroads. Street and Interurban Railways. Automobiles. Aeronautics

a. Railroads

1. General Articles

The Railway Centenary.* Eng. June 26, '25.
German Reconstruction of Railroads.* Von Dr. Wilhelm Kretzschmann. Mil Engr. July, '25.
The Railways of Nigeria. Ry. Rev. July 4, '25.
Notice sur la Ligne de Tlemcen à Beni-Saf, P. L. M. Algérian. (Notes concerning the Line from Tlemcen to Beni-Saf, Algerian P. L. M.) Rev. Gen. June, '25.
Die Kap-Kairo-Eisenbahn.* (The Cape to Cairo Railroad.) Baltzer. Z. d. Bauver. June 24, '25.

2. Location

Standardized Elevated Steel Water Tanks.* J. E. O'Leary. Can. Engr. June 30, '25.
Railway Location in the Philippines.* H. V. Campbell. Eng. & Contr. July 15, '25.

3. Roadbed. Construction Work

Waterproofing Railroad Bridges.* G. A. Haggander. West. Soc. Engrs. June '25.
Central of Georgia Reconstructs Columbus-Birmingham Line.* Ry. Age. July 11, '25.

4. Track

Report No. 2, On the Breaking of Rails.* C. J. Brown. Int. Ry. Cong. May, '25.
Report No. 3, On the Breaking of Rails.* Messrs. Merklen and Cambournac. Int. Ry. Cong. May, '25.
Report No. 4, On the Breaking of Rails.* J. Willem. Int. Ry. Cong. May, '25.
Report No. 3, On the Question of Maintenance of Track.* H. Deyl. Int. Ry. Cong. May (2nd pt.), '25.
Summary of Reports. Section I. Way and Works. R. Ruffieux. Int. Ry. Cong. June, '25.
Promoting Uniform Grading of Ties.* Ry. Eng. & Main. July, '25.
Accurate Adzing of Ties Secured by New Scoring Machine.* Ry. Eng. & Main. July, '25.
A Striking Demonstration of the Value of Drainage.* Ry. Eng. & Main. July, '25.

5. Signals and Safety Apparatus

Report No. 4, On the Question of Level Crossings.* D. Mendizabal. Int. Ry. Cong. May (2nd pt.), '25.
Report No. 4, On the Question of Fixed Signals.* C. de Benedettie. Int. Ry. Cong. May (2nd pt.), '25.
Summary of Reports. Section III. Working. E. Epinay. Int. Ry. Cong. June '25.
Brake Gear Design, Installation and Maintenance.* W. H. Clegg. (Paper read before Canadian Ry. Club.) Ry. Rev. June 13, '25.
Train Operation by Signals Only.* J. E. Saunders. (Paper read before A. R. A.) Ry. Rev. June 13, '25.
Radio Has Possibilities in Railroad Operation.* G. Y. Allen. Ry. Rev. June 27, '25.
Union Pacific Installs Train Control.* Ry. Age, July 11, '25.

6. Rolling Stock (Locomotives, cars) Fuel

Report No. 3, on the Question of Reduction of the Cost of Traction; Fuel and its Combustion.* H. Chenu. Int. Ry. Cong. May (2nd pt.), '25.
Summary of Reports. Question II. Locomotives and Rolling Stock. G. H. Emerson. Int. Ry. Cong. June, '25.
Valuable Facts to Know about Rolled Steel.* G. A. Richardson. Ry. Rev. June 13, '25.
Signals and the Conservation of Locomotive Fuel. B. J. Schwendt. (From a paper read before the Int. Ry. Fuel Assoc.) Ry. Rev. June 13, '25.
Mikado Type Locomotive for Wabash Railway.* W. A. Pownall. Ry. Rev. June 13, '25.
Developments in Locomotive Construction.* W. W. Baxter. Ry. Rev. June 13, '25.
Proposed Design for A. R. A. Standard D. S. Box Car.* Enoch Nilsson. Ry. Rev. June 20, '25.
Report on Brakes and Brake Equipment.* (Report to A. R. A.) Ry. Age, June 20, '25.
Committee on Car Construction.* (Report read before A. R. A.) Ry. Age, June 20, '25.
Report of Committee on Tank Cars. (Given Before A. R. A.) Ry. Age, June 20, '25.
Calculations for Single Sheathed Box Car Design.* (Report made to A. R. A.) Ry. Rev. June 20, '25.
London & North Eastern Railway—Mikado Locomotive.* Engr. June 26, '25.
Lubrication of Locomotives.* (From report to A. R. A.) Ry. Rev. June 27, '25.
Fundamental Factors in Fuel Conservation. G. M. Basford. (Paper read before A. R. A.) Ry. Rev. June 27, '25.
Missouri Pacific Tests Three-Cylinder Locomotive.* Ry. Age, June 27, '25.
Back Pressure as an Index to Fuel Economy.* R. W. Retterer. (Paper read before Int. Ry. Fuel Assoc.) Ry. Rev. June 29, '25.
2-8-8-2-Garratt Locomotive: L. & N. E. R.* H. N. Gresley. Eng. July 3, '25.
A New Locomotive Boiler Feed System.* Engr. July 3, '25.
The Development of the Reinforced Concrete Car.* A. B. Reeve. Ry. Age, July 4, '25.
A Heavy Highway Car for Railroad Use.* Ry. Age, July 4, '25.
Recent Developments in Motive Power Construction. (From report made to A. R. A.) Ry. Rev. July 4, '25.
Wheel Committee Gives Comprehensive Report. (From Report made to A. R. A.) Ry. Rev. July 4, '25.

New Locomotives for G. S. & W. Ry. of Ireland.* W. W. Baxter. Ry. Rev. July 4, '25.
Various Methods for Determining Fuel Performance.* (From Report to Int. Ry. Fuel Assoc.) Ry. Rev. July 4, '25.
The Three-Cylinder, High-Pressure Locomotive.* H. N. Gresley. Eng. July 10, '25.
Status of Oil-Engine Locomotive.* (From papers read before joint meeting of local sections of A. S. M. E., A. S. Refrig. Engrs., & A. S. Mar. Design.) Ry. Age, July 11, '25.
L'état Actuel de la Traction sur Voies Ferrées par Moteurs à Combustion Interne.* (Present State of Railroad Traction by Internal Combustion Engines.) E. Brillié. Soc. Ing. Civ. Fr. Mar., '25.
Le Réchauffage de l'Eau d'Alimentation des Chaudières de Locomotives sur le Réseau d'Alsace et de Lorraine.* (Reheating of Locomotive Boiler Feed Water on the Lines of Alsace and Lorraine.) M. Boulière. Rev. Gen. June, '25.
Der Abdampf-Injektor für Lokomotiven.* (Exhaust Steam Injector for Locomotives.) Hans Deutsch. Schw. Bauz. June 13, '25.

7. Use of Electricity

Report on Electric Rolling Stock. (Report made before A. R. A.) Ry. Age, June 20, '25.
Staten Island Electrification.* Ry. Age, July 4, '25.
B. & O. R. R. Completes Staten Island Electrification.* C. A. Butcher. Ry. Rev. July 11, '25.
Les Locomotives Electriques à Accumulateurs.* (Electric Storage-Battery Locomotives.) A. Milhoud. Soc. Ing. Civ. Fr. Mar., '25.
La Traction Electrique des Trains à Plusieurs Unités Motrices, avec Intercommunication en Marche sans Circuit de Contrôle.* (Electric Traction by Trains with Several Motive Units, with Intercommunication when Running Without a Control Circuit.) A. Levergnier. Gen. Civ. June 6, '25.
Der Einphasenstrom-Schnellzuglokomotive, Typ A^e 3/6 der Schweizerischen Bundesbahnen.* (The Single-Phase High-Speed Locomotive, Type A^e 3/6, of the Swiss Federal Railroad.) Schw. Bauz. Serial beginning May 30, '25.
Die Fahrleitungen der Sihtalbahn und der Uetlibergbahn.* The Trolley Contact Lines on the Sihtal and Uetliberg Railroads.) Hermann Lang. Schw. Bauz. June 27, '25.

8. Stations, Engine Houses, Shops, Terminals

Report No. 4. on the Question of Shunting Yards.* Messrs. Moutier and Pellarin. Int. Ry. Cong. May, '25.
Report No. 2. on the Question of Locomotive Sheds.* Giecomo Forte. Int. Ry. Cong. May, '25.
Solving the City Terminal Problem. Will. H. Lyford. (Paper read before Midwest Motor Transport Conference.) Mun. & Co. Eng. June, '25.
Locomotive Shop Practices on Canadian Railways.* W. W. Baxter. Ry. Rev. June 13, '25.
Passenger Car Repair Shop Design and Construction.* (Report of A. R. A. Comm.) Ry. Rev. June 20, '25.
Michigan Central Yard at Toledo Expedites Interchange.* E. R. Lewis. Ry. Age June 20, '25.
New Station at St. Paul nearly Completed.* G. E. Boyd. Ry. Rev. June 27, '25.
Fireless Steaming System at Engine Terminals.* L. G. Plant. (Paper read before Smoke Prevention Assoc.) Ry. Rev. June 27, '25.
Rock Island Builds Passenger Car Repair Shops.* W. W. Baxter. Ry. Rev. July 4, '25.
Noteworthy Passenger Terminal Completed at Chicago.* W. S. Lacher. Ry. Age, July 4, '25.
The Fireless Steaming System at Locomotive Terminals.* L. G. Plant. (Paper read before the Smoke Prev. Assoc.) Ry. Age, July 18, '25.
Ueber Verschiebe-Bahnhöfe.* (On Shunting Stations.) H. Hugi. Schw. Bauz. June 13, '25.

b. Special Railroads

3. Narrow Gauge, Light Railways

Summary of Reports. Section V. Light Railways and Colonial Railways. H. Marriott. Int. Ry. Cong. June, '25.

d. Street Railways, Elevated Railways, Subways

5. Rolling Stock

Rapid Transit Train Consisting of Four Articulated Cars.* W. G. Gove. (Paper read before Am. Elec. Ry. Assoc.) Ry. Age. July 11, '25.

f. Aeronautics

1. General Articles

Zur Entwicklung des Metallflugzeuges.* (On the Development of Metallic Flying Machines.) Georg Kaye. Oest. Ing. Arch. Ver. June 12, '25.
Ueber den Weltluftverkehr und europäische Luftverkehrsprobleme.* (On the World Air Transportation and European Air Transportation Problem.) Friedrich A. Fischer-Poturzyn. Oest. Ing. Arch. Ver. June 12, '25.

I. Municipal Water-Works. Agricultural Engineering. Irrigation

a. General Articles

Development of the Charlotte Water Works. W. E. Vest. Am. W. W. Assoc. June, '25.
Water Works Practice in Quebec. Théo. J. Lafrenière. Am. W. W. Assoc. June, '25.
Cardiff Corporation Waterworks—Llwyn-on Reservoir and Cantref Roughing Filters.* H. W. B. Cotterill. Inst. Mun. & Co. Engrs. June 16, '25.
Well-Managed Private Water Plant at Lexington, Kentucky.* Eng. N. R. July 9, '25.

b. Hydrology. Water Resources

A Weather Bureau at the Pumping Station. Scotland G. Highland. Am. W. W. Assoc. June, '25.
Deep-Well Water Pumping.* G. B. Mullov. Power, June 23, '25.
Dry-Weather Flows.* Engr. June 26, '25.
Der Firstbrunnen, eine neue Ausführungsform des Emscherbrunnens.* (The "First" Well Construction, A New Form of Construction of the Ems Well.) F. Schimrigk. Gesund. Ing. May 30, '25.

c. Dams and Reservoirs

Color and Other Phenomena of Water from an Unstripped Reservoir in New England.* Caleb Mills Saville. N. E. W. W. Assoc. June, '25.
Storage—A Solution of the Fire Reserve Problem. Charles W. Parsons. Am. W. W. Assoc. June, '25.
British Columbia Dams.* E. Davis and E. G. Marriott. Eng. Inst. Can. July, '25.
Multiple Arch Dam Disintegrates under Low Temperatures.* Eng. N. R. July 2, '25.
Partial Failure of Earth Dam at Horton, Kansas.* E. B. Black. Eng. N. R. July 9, '25.
Exchequer Dam Construction Plant.* Eng. & Contr. July 15, '25.
Zwei Expertenberichte über die Ursachen des Einsturtzes der Gleno-Staumauer in Oberitalien. (Two Expert Reports on the Causes of the Failure of the Gleno Dam in Upper Italy.) K. E. Hilgard. Schw. Bauz. May 30, '25.
Kolkungen und Sicherungsarbeiten am Stauwehr Augst-Wyhlen.* (Erosion and Safety Measures Taken at the Augst-Wyhlen Dam.) E. Frölich. Schw. Bauz. June 27, '25.

d. Analysis and Purification of Water

Hydrogen Ion Concentration and Peptones Used in Bacteriology.* E. M. Chamot and F. R. Georgia. Am. W. W. Assoc. June, '25.
A Novel Cooling Pond.* E. J. Rowe. Am. W. W. Assoc. June, '25.
Water Treatment and Softening Plant at Springfield, Illinois.* C. S. Timanus. Am. W. W. Assoc. June, '25.
Symposium on Wood-Grating in Filters and Cemented-Gravel Layer. Eng. N. R. June 25, '25.
Drinking Water Standards for U. S. Public Health Service. Eng. & Contr. July 8, '25.

e. Distribution of Water

Some Results of Pipe Cleaning. Burt B. Hodgman. N. E. W. W. Assoc. June, '25.
Metropolitan Water Supply Systems.* Morris Knowles and John A. Fulkman. Am. W. W. Assoc. June, 25.
When Are Electrically Operated Pumps Economical. F. S. McClintock. Am. W. W. Assoc. June, '25.
Standardized Elevated Steel Water Tanks.* J. E. O'Leary. Can. Engr. June 30, '25.
Toronto Insufficiently Metered. C. Bradshaw. Can. Engr. June 30, '25.
Construction of Wood Stave Pipe Line.* J. B. Holdcroft. Can. Engr. July 7, '25.
Town Solves Fire Flow Problem with Standpipe.* H. F. Huy. (From *Fire and Water Engineering.*) Eng. & Contr. July 8, '25.
Planning Centrifugal Pumping Installations for Maximum Efficiency.* R. K. Annis. Power, July 14, '25.
Dückerabsenkung im Spandauer Schiffahrtkanal.* (Inverted Siphon Sinking in the Spandau Canal.) Georg Meyer. Z. d. Bauver. May 27, '25.
Das Stauwerk bei Sennar im Blauen Nil und die Bewässerung der Ebene Gezireh in Oberägypten.* (The Dam at Sennar on the Blue Nile and the Irrigation of the Gezirah Plain in Upper Egypt.) Eger. Z. d. Bauver. June 17, '25.

J. Sewerage. Sewage and Refuse Disposal

a. Sewers and Drains

Points in the Design and Construction of Pipe Sewers.* A. G. Dalzell. Eng. N. R. July 2, '25.
Beitrag zur Bestimmung der Regenflutwelle in grosstädtischen Sielnetzen.* (Contribution on the Determination of the Rain Flood Wave in Large Municipal Sewer Systems.) Otto Schoenefeldt. Zeit. Bau. Pt. 4, '25. (Ingenieurbauteil.)

b. Sewage Disposal, Purification

Recent Additions to the Sewerage System and Disposal Works of Framingham, Mass. F. W. Haley. Bost. Soc. C. E. June, '25.
Public Conveniences.* E. F. Spurrell. Inst. Mun. & Co. Engr. June 16, '25.
Purification of Sewage—Sludge Digestion.* Wm. Gore and G. G. Nasmith. Can. Engr. June 16, '25.
Refuse Collection and Disposal in Pittsburgh.* Morris Knowles. (From report made to the City of Pittsburgh.) Eng. N. R. June 25, '25.
Tests on the Air Ejector Sewage System at Gosport.* Harold Cliffe. Inst. Mun. & County Engrs. July 1, '25.
Some Results of Sewage Filtration.* H. W. Clark. (From Report Dept. of Public Health of Mass.) Eng. & Contr. July 8, '25.
Accident to Imhoff Tank Unit at Fort Worth, Texas.* J. B. Hawley. Eng. N. R. July 9, '25.
Zur Berechnung der Absetzbecken.* (On the Design of Settling Basins.) K. Imhoff. Gesund. Ing. June 20, '25.

Beitrag zur Prüfung und Kontrolle biologischer Kläranlagen.* (Contribution to the Testing and Control of Biological Purifying Plants.) P. Uhlenhuth and E. Remy. Gesund. Ing. June 20, '25.
Automatische Kläranlage.* (Automatic Clarifying Plant.) Karl Buchner. Gesund. Ing. June 27, '25.

K. Heat Engines

a. Steam Engines. Boilers

Concentration in Boilers.* G. D. Bradshaw. Engr. Soc. W. Pa. May, '25.
Un Nouveau Point de Vue sur le Traitment des Eaux de Chaudiéres. (A New Viewpoint on the Treatment of Boiler Waters.) H. A. de Conty. Gen. Civ. June 27, '25.

b. Steam Turbines

Practical Points in Testing Steam Turbines.* A. A. Brooks. Power, June 23, '25.
Figuring Steam Requirements for Combined Bleeder-Mixed-Pressure Turbine.* J. Y. Dahlstrand. Power, July 14, '25.

c. Gas and Oil Engines

The Diesel Engine and Its Overall Economy.* C. B. Jahnke. N. E. W. W. Assoc. June, '25.
Diesel Engine Experience in a Modern Forge Plant. J. P. Harbeson, Jr. N. E. W. W. Assoc. June, '25.
Le Moteur Diesel dans la Marine Marchande; les Paquebots à Moteurs.* (The Diesel Engine in the Merchant Marine; Motor Ships.) Ol. Quéant. Gen. Civ. June 13, '25.
Operation of Diesel Engines.* R. Hildebrand. Power. June 23, '25.
An Unusual Diesel Engine Installation.* Delbert Kay. Mil. Engr. July, '25.
10 000 H. P., Double-Acting Diesel Engine for M. SS. "Asturias".* Eng. July 10, '25.

L. Electricity

a. Production of Electricity

2. Magneto and Dynamo-Electric Machines
Hydrogen as a Cooling Medium for Electric Machinery.* Edgar Knowlton, C. W. Rice, E. H. Freiburghouse. A. I. E. E. July, '25.
Three 65 000 Kva. Generators at Niagara Falls.* Power, July 21, '25.

b. Distribution and Transmission of Electricity

1. Power Plants
Ratios in Power-Plant Design.* J. G. Fairfield. Power, June 30, '25.
The Trenton Channel Plant of the Detroit Edison Company.* C. F. Hirschfield. A. I. E. E. July, '25.
Thornhill Power Station Extensions.* Eng. July 10, '25.
The Variation of Power Station Efficiency with Output.* R. H. Parsons. Eng. July 10, '25.
2. Long-Distance Transmission of Energy
La Commande à Distance par Ondes Hertziennes. L'emploi des Rélais à Arc de Mercure. (Control at a Distance by Herzian Waves. The Use of Mercury-Arc Relays.) H. Bouillet. Gen. Civ. Ser. begin. June 13, '25.
4. Measures. Meters. Rate Making
A New Method and Means for Measuring Dielectic Absorption.* R. E. Marbury. A. I. E. E. July, '25.
5. Transformers and Converters
Voltage Control Obtained by Varying Transformer Ratio.* I. F. Blume. A. I. E. E. July, '25.
Separate Leakage Reactance of Transformer Windings.* O. G. C. Dahl. A. I. E. E. July, '25.
Synchronous Motors Used for Voltage and Power-Factor Regulation.* S. H. Mortenson. Power, July 14, '25.

x. Miscellaneous

Law Description and Hypothesis in the Electrical Science. M. I. Pupin. A. I. E. E. July, '25.

M. Architecture

b. Business and Commercial Buildings

Attractive Architectural Treatment Used on New Office Units.* Ry. Age, June 27, '25.

e. Hospitals and Asylums

Einweihung der klinischen Neubauten der Westfälischen Wilhelms-Universität in Münster.* (Dedication of the New Clinical Building of the Westphalian Wilhelms University at Munster.) Z. d. Bauver. June 3, '25.

f. Factories and Mill Buildings

Eine neue Presstorffabrik.* (A New Pressed Peat Factory.) A. Housding. Ver. deu. Ing. June 6, '25.

x. Miscellaneous

Earthquake Damage to Santa Barbara Buildings.* H. D. Dewell. Eng. N. R. June 9, '25.
Building for Industrial Research and Testing Work.* Eng. N. R. June 25, '25.
Earthquake Damage to Santa Barbara Buildings.* H. D. Dewell. Eng. N. R. July 9, '25.

O. Administration. Legislation. Economics. Statistics

b. Economic Questions of a General Character; Valuations, etc.

Middle Cost Method of Determining Value.* Willis D. P. Warren. Mun. & Co. Eng. June, '25.
Le Congo et les Carrières Coloniales d'Ingénieur.* (The Congo and Colonial Engineering Careers.) V. Van Lint. Ann. T. P. Belg. June, '25.

d. Administrative and Financial Management of Means of Communication

5. Railroads and Street Railways

Report No. 2, on the Question of Statistics. Col. J. T. Loree. Int. Ry. Cong. May, '25.
Report No. 3, on the Question of the Eight-Hour Day. W. Clower. Int. Ry. Cong. May, '25.
Section IV, General Question XI (Statistics). A. E. Kirkus. Int. Ry. Cong. June, '25.
The Application of Graphic Representation to Railway Performance.* Charles Weiss. Ry. Rev. June 13, '25.
Report of Arbitration Committee. (Read before A. R. A.) Ry. Age. June 20, '25.
Report or Loading Rules Committee.* (Read before A. R. A.) Ry. Age. June 20, 25.
Financing Railroad Grade Crossing Elimination. W. D. Hudson. Eng. N. R. July 9, '25.
Statistical Bureau of Freight Auditor's Office. L. R. Wolff. Ry. Rev. July 11, '25.
Revenues and Expenses of Railways. Ry. Age, July 11, '25.
Statistics as an Aid to Railroad Operation. J. E. Slater. Ry. Rev. Serial beginning July 18, '25.
The St. Paul Plan of Rate Relief. J. S. Eaton. Ry. Age. July 18, '25.
La Pologne et les Communications Européenes.* (Poland and European Communications.) M. G. Harcavi. Rev. Gen. June, '25.

e. Legislation—Questions Concerning Wages and Working Conditions

Report No. 1, on the Question of the Eight-Hour Day.* L. Velani. Int. Ry. Cong. May (2nd pt.) '25.
Report No. 2, on the Question of the Eight-Hour Day.* M. Soulez. Int. Ry. Cong. May (2nd pt.), '25.
Day Labor Operations in Public Construction. Eng. & Contr. (From Report of Assoc. General Contr. of America.) Serial beginning June 17, '25.

f. Engineering Ethics

Problems of the Construction Industry. Brig. Gen. R. C. Marshall, Jr. Bost. Soc. C. E. June, '25.
Chicago Engineers Define Scope of "Free" Engineering. Eng. N. R. July 9, '25.

Q. Surveying and Geodesy

Topographical and Exploration Surveys.* J. W. Pierce. Can. Engr. June 30, '25.
The Military Survey of Panama.* J. M. Young. Mil. Engr. July, '25.

S. City Planning

Controlling the Subdivision of Land Into Building Lots. Robert Whitten. Mun. & Co. Eng. June, '25.
Vision in Municipal Engineering.* J. Franklin Bell. Mil. Engr. July, '25.
Le Parc des Expositions de la Ville de Paris et la Foire de Paris. (The Exposition Park of the City of Paris and the Paris Fair.) G. Coupan. Gen. Civ. June 6, '25.
Die Anordnung von Schleppgleisen und Strassen in Gewerbevierteln.* (The Arrangement of Industrial Tracks and Streets in Industrial Districts.) Rudolf Kern. Oest. Ing. Arch. Ver. June 26, '25.

Employment Service

The Engineering Societies Employment Service is under the joint management of the National Societies of Civil, Mining, Mechanical, and Electrical Engineers as a co-operative Bureau available only to their membership, and maintained by the contributions from the Societies and their individual members who are directly benefited.

Men Available.—Under this heading, brief announcements will be published without charge. These announcements will not be repeated, except on request received after an interval of one month. Names and records will remain in the active files of the Bureau for a period of three months, and are renewable on request. Notice for *Proceedings* should be addressed to Employment Service, 33 West 39th Street, New York, N. Y., and should be received prior to the first of the month.

Opportunities.—A Bulletin of engineering positions available is published weekly and is available to members of the Societies concerned at a subscription rate of $3 per quarter, or $10 per annum, payable in advance. Positions which are not filled promptly as a result of publication in the Bulletin, may be announced herein.

Voluntary Contributions.—Members obtaining positions through the medium of this Service are invited to co-operate with the Societies in the financing of the work by nominal contributions made within thirty days after placement, on the basis of $10 for all positions paying a salary of $2 000 or less per annum; $10 plus 1% of all amounts in excess of $2 000 per annum; temporary positions (of one month or less), 3% of total salary received. The income contributed by the members, together with the finances appropriated by the four Societies named, will be sufficient, it is hoped, not only to maintain but to increase and extend the service.

Replies to Announcements.—Replies to announcements published herein, or in the Bulletin, should be addressed to the key number indicated in each case, with a two-cent stamp attached for re-forwarding. and forwarded to the Employment Service at the address given. Replies received by the Bureau after the positions to which they refer have been filled, will not be forwarded.

POSITIONS AVAILABLE

EXPERIENCED STRUCTURAL DESIGNER. Opportunity for ambitious man of ability and energy. Apply by letter giving experience and references. Location, Missouri. R–6984.

MEN AVAILABLE

HYDRAULIC AND SANITARY ENGINEER, Assoc. M. Am. Soc. C. E.; graduate civil engineer; married. Twelve years' experience in design and construction of engineering works. Available on short notice as present work is about finished. A–466.

HYDRAULIC AND ELECTRICAL ENGINEER, M. Am. Soc. C. E.; graduate mechanical and electrical engineer. Twenty years' experience in public utility service and investigating, designing, and building hydro-electric developments, transmission lines, and sub-stations. Designer in concrete and reinforced concrete, structural, and construction work, particularly large propositions. Desires responsible position as designer, chief engineer, or manager. B–4760.

CIVIL ENGINEER, Assoc. M. Am. Soc. C. E.; age 30; desires location preferably in foreign field. Seven years' experience; three years on surveys, mapping, explora-

tion, prospecting, and development of bauxite deposits in South America and Africa; three years in oil-field engineering; one year construction. Fair knowledge of Spanish and French. Available on short notice. B–5212.

ASSISTANT PROFESSOR STRUCTURAL ENGINEERING, Assoc. M. Am. Soc. C. E.; age 31; married. Three years' teaching experience; six years' practical experience. At present employed as designing engineer. Available within one month. B–6157.

ENGINEER, Assoc. M. Am. Soc. C. E., of wide experience, wishes engagement for one or two years; railroad location, construction, heavy foundation work, building construction, reinforced concrete, irrigation surveys, and mapping. Can furnish high-grade instruments for field or office. Prefers foreign location. Immune to all tropical diseases. B–7494.

CIVIL AND PETROLEUM ENGINEER, M. Am. Soc. C. E. Eight years field and office; five years assistant city engineer; five years private practice; seven years past executive large corporation. Municipal, highway, railroad, or oil and gas development desired; connection with responsible oil or financial company preferred. Salary secondary. B–8134.

CIVIL ENGINEER, Assoc. M. Am. Soc. C. E., age 40; married. Fourteen years' continuous engineering experience, including railroad location, construction, and maintenance. Has made extensive studies of grade reduction problems. With present employer six years (Railroad System). Available for responsible position. B–9037.

PROFESSOR, Assoc. M. Am. Soc. C. E.; licensed engineer with C. E. and M. S. degrees. Seven years' engineering experience in highways and structures; seven years' experience teaching drawing, mechanics, highways, and structures. At present with large university, desires change to smaller university or college. B–9617.

CIVIL ENGINEER, Assoc. M. Am. Soc. C. E., Master of Arts; family; with fifteen years' experience in business and financial aspects of engineering, including explorations, development work, investigations, and financial analyses. Has $15 000 to invest under appropriate circumstances in engineering utility, industrial, or banking corporation. Salary $6 000 per annum. Available on reasonable notice. C–154.

ENGINEER SALESMAN OR CONTRACTOR'S SUPERINTENDENT, Affiliate, Am. Soc. C. E.; age 35. Eleven years' experience in asphalt paving as engineer, superintendent, and general manager of contracting firm. Location preferred, South Florida. C–168.

CIVIL ENGINEER, M. Am. Soc. C. E.; age 54; married. Thirty years' general engineering experience, including sewers, pipe lines, railroad construction, and hydraulic structures on river improvements, with some designing experience. Desires position as resident engineer on construction, preferably hydraulic or railroad work. Location, New York or New England. C–185.

CONSTRUCTION OR OFFICE ENGINEER, Assoc. M. Am. Soc. C. E.; age 40; married. Eighteen years' experience. Has handled an engineering force of fifty men on field and office work, railroad location, surveys, design, construction; bridge masonry design, reinforced concrete, bridge construction, water supply, dams, reservoir, drainage, concrete highway construction, city work, sewers, all kinds of surveys, drafting, valuation, and accounting. Now available. Location immaterial. C–207.

HYDRAULIC ENGINEER, M. Am. Soc. C. E. Twenty years' experience in harbors, drainage, water power; concrete and earth dams, spillways, movable dams, power-houses, totaling over 200 000 h. p., desires connection with public utility engineers or operators. C–259.

Membership

(From July 1, to August 4, 1925)

Additions

		Date of Membership.
ABBOTT, Eli, Jr. Civ. Engr. (Abbott Eng. Co.), Greenwood, Miss.	Assoc. M.	July 6, 1925
ANDERSON, James Aylor. Prof., Civ. Engr., Virginia Military Inst., Lexington, Va.	Assoc. M. M.	Nov. 9, 1920 July 7, 1925
ANDREWS, Charles Morrison. Dept. Mgr., Richmond Structural Steel Co., 2708 East Grace St., Richmond, Va.	Assoc. M.	Mar. 16, 1925
AYRES, Louis Evans. Hydr. and Elec. Engr. (Ayres, Lewis, Norris & May), Cornwell Bldg., Ann Arbor, Mich.	Jun. Assoc. M. M.	Dec. 1, 1908 Dec 3, 1913 July 6, 1925
BAKER, Roland Gail. Designing Engr., Salt River Val. Water Users Assoc. (Res., 1422 North Central Ave.). Phœnix, Ariz.	Assoc. M.	July 6, 1925
BALLARD, James Irving. 2426 Le Conte Ave., Berkeley, Calif.	Jun.	July 6, 1925
BANDTEL, Herbert Eugene. Asst. Engr., Milwaukee Elec. Ry. & Light Co., 419 Public Service Bldg. (Res., 477 Fifty-second St.), Milwaukee, Wis.	Assoc. M.	Mar. 16, 1925
BARBER, William Thomas Edward. With Dept. of City Transit, Philadelphia (Res., 134 South Lansdowne Ave., Lansdowne), Pa.	Jun. Assoc. M.	June 6, 1921 July 6, 1925
BARNES, Harry. Res. Engr., San Joaquin River Water Storage Dist., Bank of Los Banos Bldg., Los Banos, Calif.	Assoc. M. M.	Sept. 12, 1916 July 6, 1925
BARNES, Raymond Edwin. Engr. and Contr. (Orr-Barnes Constr. Co.), 923 Volunteer Bldg., Chattanooga, Tenn.	Assoc. M.	April 20, 1925
BARREKETTE, Abraham Eliezer. Hydro-Elec. Designer, Elec. Bond & Share Co., 71 Broadway (Res., 56 East 184th St.), New York, N. Y.	Jun.	Jan. 19, 1925
BINCKLEY, Sydney William. Field Engr., Southern California Gas Co. (Res., 1247 La Brea Ave.), Los Angeles, Calif.	Jun.	July 6, 1925
BIRD, Cyrus Remington. Dist. Mgr., The Pitometer Co., 906 Majestic Bldg., Detroit, Mich.	Assoc. M.	July 6, 1925
BOYNTON, Charles Otis. Asst. Engr., E. C. L. Wagner (Res., 3524 Baltimore Ave.), Kansas City, Mo.	Assoc. M.	July 6, 1925
BRES, Edward Sedley. Contr. Engr. (Scott & Bres), 305 Canal-Commercial Bldg., New Orleans, La.	Assoc. M. M.	Nov. 27, 1917 July 6, 1925
BRYAN, Everett N. Office Engr., Div. of Water Rights, Dept. of Public Works, State of California, 707 Forum Bldg. (Res., 3400 I St.), Sacramento, Calif.	Assoc. M. M.	Nov. 3, 1915 July 7, 1925
BUCKLEY, Thomas. Surv. and Regulator of the 15th Dist., Bureau of Surveys, Dept. of Public Works (Res., 215 East Wyoming Ave.), Philadelphia, Pa.	Assoc. M.	July 6, 1925
CANAVAN, Patrick Francis. Gen. Supt., Friestedt Underpinning Co., 244 Madison Ave. (Res., 100 Morningside Drive), New York, N. Y.	Jun. Assoc. M.	Mar. 7, 1921 Jan. 19, 1925
CARTER, Charles Keen, Jr. Care, State Highway Dept., Lynchburg, Va.	Jun.	Mar. 16, 1925
CHADWICK, Wallace Lacy. Div. Engr., Southern California Edison Co., Camp 63, Big Creek, Calif.	Assoc. M.	July 6, 1925
CHRYSTALL, Harvey Maitland. Asst. Engr., The Foundation Co., 885 Colombo St., North, Christchurch, New Zealand.	Assoc. M.	April 20, 1925
CHRISTIANSON, Hilmar Barman. Asst. Engr., C. M. & St. P. Ry., C. M. & St. P. Passenger Station (Res., 1305 South Cornelia Ave.), Sioux City, Iowa.	Assoc. M.	June 1, 1925
COMBER, Thomas Francis, Jr. Instr. in Civ. Eng., The Johns Hopkins Univ., Baltimore, Md.	Assoc. M.	Jan. 19, 1925
CONKLING, Harold. Associate Hydr. Engr., Div. of Water Rights, State Dept. of Public Works. 511 West Main St., Alhambra, Calif.	Assoc. M. M.	Nov. 12, 1913 July 6, 1925
CORTELYOU, Frank Morgan. Asst. Engr., Harrington, Howard & Ash. (Res., 738 Cowper St.), Palo Alto, Calif.	Assoc. M. M.	Mar. 14, 1916 July 6, 1925
CRANCH Eugene Thompson. Asst. Engr., Dept. of Eng. (Res., 2 Meech Park, Charlotte Station), Rochester, N. Y.	Jun. Assoc. M.	Nov. 26, 1918 July 6, 1925
CRANDALL, Carl. City Engr.; Chf. Engr., Finger Lakes State Parks Comm.; Cons. Engr. (Res., 123 Heights Court), Ithaca, N. Y.	Jun. Assoc. M. M.	Oct. 1, 1912 Nov. 28, 1916 July 7, 1925
DEAN, John Thornton. Box 213, Pennington, N. J.	Assoc. M.	Mar. 16, 1925
DEYOUNG, Warren Edward. 151 North Macomb St., Monroe, Mich.	Assoc. M.	June 1, 1925
ELCOCK, Charles. Res. Engr., Delaware River Bridge Joint Comm. (Res., 123 Bethlehem Pike, Chestnut Hill), Philadelphia, Pa.	Assoc. M. M.	June 16, 1919 July 6, 1925
ELIOT, William Mack. Chf. Engr., Mosher Steel & Machinery Co., Dallas, Tex.	Jun. Assoc. M. M.	May 7, 1913 Mar. 12, 1918 July 6, 1925

MEMBERSHIP—(*Continued*)

		Date of Membership.
FIRTH, Joseph. 412 Guaranty Bldg., West Palm Beach, Fla.	Assoc. M.	June 5, 1907
	M.	July 6, 1925
FOSTER, James Apker, Jr. Dist. Right of Way Engr., Dist. No. 4, Illinois Div. of Highways, 830 Main St. (Res., 600 Fayette St.), Peoria, Ill.	Jun.	May 12, 1919
	Assoc. M.	April 20, 1925
FOX, Harold Kinne. Supt. of Constr., San Joaquin Light & Power Corporation, Fresno, Calif.	Assoc. M.	July 6, 1925
GARSAUD, Marcel. Chf. Engr., Board of Levee Commrs., Orleans Levee Dist., 201 New Court House Bldg., New Orleans, La.	M.	July 6, 1925
GRUNER, Henri Edward. Cons. Engr., Nauenstrasse 9, Basle, Switzerland	M.	June 1, 1925
GUARDIA, Tomas. Chf. of Party and Div. Engr., Junta Central de Caminos, Panama, Panama	Assoc. M.	July 6, 1925
GUNTHER, Charles Otto. Prof. and Head, Dept. of Math., Stevens Inst. of Tech.; Cons. Engr., Box 77, Hoboken, N. J.	Affiliate	Sept. 6, 1910
	M.	July 6, 1925
HALVERSON, George. 104 South Manor Ave., Kingston, N. Y.	Assoc. M.	July 6, 1925
HARRINGTON, Arthur William. Dist. Engr., U. S Geological Survey, 704 Journal Bldg., Albany, N. Y.	Jun.	Dec. 6, 1910
	Assoc. M.	Dec. 31, 1913
	M.	July 6, 1925
HARRISON, Edward Lee. Archt., 1503 Fidelity Bank Bldg., Memphis, Tenn.	Assoc. M.	Dec. 5, 1911
	M.	July 7, 1925
HATCH, Arthur Elliott. Engr. and Asst. Mgr., J. S. Packard Dredging Co., 1004 Turks Head Bldg., Providence, R. I.	M.	July 6, 1925
HENDERSON, James Henry. Second Asst. Chf. Engr., Dept. of Streets and Public Impvts., City Hall (Res., 175 Bergen Ave.), Jersey City, N. J.	Assoc. M.	July 6, 1925
HILL, Edward Baxter. Topographer, U. S. Geological Survey, Washington, D. C.	Assoc. M.	July 6, 1925
HOLT, Taylor, Jr. 508 South Sheppard St., Richmond, Va.	Jun.	July 6, 1925
HOLWAY, Alvah Story. Cons. Engr. (Holway Eng. Co.), 503 Wright Bldg., Tulsa, Okla.	Assoc. M.	Nov. 26, 1923
	M.	July 7, 1925
HOYT, Laurence Brackett. Surv., Manchester Highway Comm., City Hall, Manchester, N. H.	Assoc. M.	May 8, 1922
	M.	July 7, 1925
HSU, Kuan-San. Draftsman, Am. Bridge Co., 728 Broadway, Bethlehem, Pa.	Jun.	July 6, 1925
HURLEY, John James. Constr. Engr., Eastern Div., National Lime Assoc., 41 Bonair St., Somerville, Mass.	Jun.	April 16, 1918
	Assoc. M.	Mar. 9, 1920
	M.	July 6, 1925
ISMON, Charles Porter. Field Engr. under City Engr. (Res., 107 East Morrell St.), Jackson, Mich.	Jun.	July 6, 1925
KIBBEY, Biscoe Albertson. Asst. Hydr. Engr., State Div. of Water Rights (Res., 3009 C St.), Sacramento, Calif.	Assoc. M.	July 6, 1925
KIDDER, Arthur Dale. Associate Supervisor of Surveys, Gen. Land Office, Washington, D. C. (Res., 25 Hesketh St., Chevy Chase, Md.)	M.	July 6, 1925
KIDDER, Arthur Worcester. Asst. Field Engr., Dept. of Civ. Eng., Pacific Gas & Elec. Co., Pit No. 3, Burney, Calif.	Assoc. M.	July 6, 1925
KIPP, Edison DeWint. 26 Bartholomew Apartments, Miami Beach, Fla.	Assoc. M.	July 6, 1925
LARRIMER, Jesse Poague. Superv. Engr., Horace Trumbauer (Res., 5115 Pine St.), Philadelphia, Pa.	Assoc. M.	July 6, 1925
LILLARD, R. Stewart. Constr. Engr., 2d Div., State Highway Dept., Box 533, Y. M. C. A., Nashville, Tenn.	Assoc. M.	June 1, 1925
LOCKHART, Oliver Clifton. 1116 Twenty-third St., Ogden, Utah.	Assoc. M.	July 6, 1925
LOVEJOY, Wilbur Nahum. Res. Engr., State Highway Comm., Redfield, S. Dak.	Assoc. M.	July 6, 1925
McNAMARA, Neil Stuart. Care, Asst. Chf. Engr., O. S. L. R. R., Salt Lake City, Utah.	Assoc. M.	July 6, 1925
McNUTT, George Enfield. 111 Arlington Terrace, Rocky Mount, N. C.	Assoc. M.	June 1, 1925
McWILLIAMS, Douglas Edmund. Pres., Bear Gap Water Co.; Mgr., Roaring Creek Water Co., Box 17 Shamokin, Pa.	Jun.	July 6, 1925
MARSHALL, Joseph Pierce. Gen. Supt., Everett Winters Co., 1024 Book Bldg. (Res., 2715 Glynn Court), Detroit, Mich.	M.	July 6, 1925
MENDENHALL, Frederick Boone. Rodman, P R. R., 418 Y. M. C. A., Fort Wayne, Ind.	Jun.	July 6, 1925
MINAKER, William Lain. 708 Georgia St., Vallejo, Calif.	Jun.	June 1, 1925
MULVIHILL, Francis John. Landscape Archt.; Town and City Planner with John Nolen, Harvard Sq., Cambridge, Mass.	Assoc. M.	July 6, 1925
NILES, Alfred Salem, Jr. Aeronautical Structural Engr., Eng. Div., U. S. Air Service, Airplane Section, McCook Field, Dayton, Ohio.	Jun.	May 13, 1918
	Assoc. M.	July 6, 1925
OESTERLE, Harry Adolph, Jr. Res. Engr., New Niquero Sugar Co., Central Niquero, Niquero, Cuba.	Assoc. M.	July 6, 1925
OGDEN, Ralph Richardson. Instr. in Civ. Eng., Polytechnic Inst. of Brooklyn, 107 Montague St., Brooklyn, N. Y.	Assoc. M.	July 6, 1925

MEMBERSHIP—(*Continued*)

		Date of Membership.
PALMER, Chester Bonney. Asst. Engr., Pacific Gas & Elec. Co., 245 Market St., San Francisco (Res., 425 Hope St., Mountain View), Calif.	Jun.	July 6, 1925
PETTIS, Charles Roberts. 300 Customhouse. Baltimore, Md.	M.	July 6, 1925
PROUTY, Winfred Lafayette. 4550 Julian St., Denver, Colo.	Assoc. M.	June 1, 1925
RICHMOND, Jackson Litton. Treas. and Gen. Mgr,. Union Sand & Gravel Co., Box 1266, Huntington, W. Va.	Assoc. M. M.	Oct. 4, 1910 July 7, 1925
ROBINSON, Charles Custer. Archt. (Charles M. Robinson); Cons. Engr. for H. W. Witcover. 1002 Times Dispatch Bldg., Richmond, Va.	Assoc. M. M.	Mar. 12, 1923 July 7, 1925
RUDOLPH, Roy Francis. Dist. Engr., State Highway Comm., Box 36, Holly Springs, Miss.	Assoc. M.	July 6, 1925
RUPPEL, Walter. Designing Engr., Henry D. Dewell, 422 Sharon Bldg. (Res., 970 Geary St.), San Francisco, Calif.	Assoc. M.	July 6, 1925
RUSSELL, George Edmond. Cons. Engr.; Prof. of Theoretical Hydraulics, Mass. Inst. Tech., Cambridge, Mass.	M.	July 6, 1925
RUTTER, Josiah Baldwin. Chf. Engr., The Merrimac Chemical Co., 148 State St., Boston (Res., 10 Summit Ave., Wakefield), Mass.	Assoc. M. M.	April 7, 1924 July 7, 1925
SANDGREN, Edward Andrew. Supt. of Constr., Hegeman Harris Co., 360 Madison Ave., New York (Res., 1053 Fifty-seventh St., Brooklyn), N. Y.	Affiliate	Mar. 16, 1925
SAXE, John Burtis. Draftsman, Gibbs & Hill, Pennsylvania Station (Res., 44 East 72d St.), New York, N. Y.	Jun.	July 6, 1925
SCHNEIDER, Edward Charles. North Ridgeville, Ohio	Jun.	July 6, 1925
SCHWERTNER, Charles Henry. Supt.. Turner Constr. Co., 13 East Austin Ave., Chicago, Ill.	Assoc. M.	July 6, 1925
SELLERS, Francis Bachman. Contr. Engr. and Gen. Supt., O. A. Mann & Co., Box 595, Washington, N. C.	Assoc. M.	June 1, 1925
SHAW, Gerald Edison. 348 Sherbrooke St., West, Montreal, Que., Canada	Jun.	July 6, 1925
SIMPSON, Thomas Russel. Asst. Hydr. Engr., Div. of Water Rights, State Dept. of Public Works, 707 Forum Bldg., Sacramento, Calif.	Assoc. M.	July 6, 1925
SOPP, Claude Wellington. Asst. Engr., Pasadena Water Dept., 1933 Juanita Ave., Pasadena, Calif.	Jun. Assoc. M.	June 16, 1919 June 1, 1925
STEGNER, Joseph Conrad. City Engr., Newport, Wash.	Assoc. M.	June 1, 1925
TEMPEST, Joseph Edward. Asst. City Engr., City Hall (Res., 3125 E St.), Sacramento, Calif.	Assoc. M.	Mar. 16, 1925
THOMAS, Marvin Watterson. Care, Am. Bridge Co., Pencoyd, Pa.	Assoc. M.	June 1, 1925
THURLOW, Oscar Gowen. Chf. Engr., Alabama Power Co., 651 Brown Marx Bldg., Birmingham, Ala.	Assoc. M. M.	Mar. 2, 1915 July 6, 1925
TROWBRIDGE, Douglas Stanley. Asst. Prof., Civ. Eng., New York Univ., University Heights (Res., 53 East 182d St.), New York, N. Y.	Assoc. M.	July 6, 1925
WILLARD, Edwin Ruthven. Asst. Dist. Engr., Standard Oil Co., San Francisco (Res., 1950 Hopkins St., Berkeley), Calif.	Affiliate Assoc. M.	Nov. 21, 1921 July 7, 1925
WOOD, Henry Charles. Office Man, Fred H. Tibbetts, 310 Sansome St., San Francisco (Res., 2910 Newbury St., Berkeley), Calif.	Jun.	July 6, 1925

Reinstatements

MEMBERS

	Date of Reinstatement.
ALLEN, Chauncey Loomis	July 6, 1925
GARRATT, Allan Vinal	July 6, 1925
HARTWELL, Harry	July 6, 1925
HENGST, Robert Graham	July 6, 1925
MACREDIE, John Robert Clarke	July 6, 1925

ASSOCIATE MEMBERS

CHAMBERLAINE, Robert Lloyd	July 6, 1925
COX, Thomas Augustus, Jr	July 6, 1925
ELDER, Ernest Hartwell	July 6, 1925
ROSENTHAL, Cerf	July 6, 1925
STANDISH, Seymour	July 6, 1925
WILD, Edward Charles	July 6, 1925

JUNIORS

LEVY, Joseph Irwin	July 6, 1925

AFFILIATES

RYAN, Laurence Patrick	July 6, 1925

Deaths

BARR, John Toner. Elected Member, March 4, 1913; died June 27, 1925.

EDDY, Charles Wells. Elected Associate Member, March 2, 1909; Member, June 24, 1914; died June 18, 1925.

REYNOLDS, William LeRoy. Elected Associate Member, February 4, 1914; Member, April 14, 1919; date of death unknown.

RODMAN, George Edward. Elected Member, November 27, 1917; died January 21, 1925.

WILKINSON, Frederick Allen. Elected Associate Member. July 9, 1912; died March 26, 1925.

Total Membership of the Society, August 4, 1925

Members	**5 004**	
Associate Members	**5 315**	
Corporate Members		**10 319**
Honorary Members		**13**
Juniors		**801**
Affiliates		**156**
Fellows		**8**
Total		**11 297**